

1.1.3: Average percentage of courses having focus on employability/entrepreneurship/ skill development offered by the institution during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
SVU College of Arts							
1	Adult & Continuing Education	MA AE 1.1	Alternative learning systems	2017			√
		MA AE 1.2	Policy Studies In Adult/Continuing Education	2017			
		MA AE 1.3	Adult Psychology And Learning	2017			√
		MA AE 1.4	Socio-Philosophical Foundation Of Adult Education	2017			
		MA AE 1.5	Communication Methods in Adult Education	2017	√		
		MA AE 1.6	Human Values And Professional Ethics-I	2017			
		MAAE-2.1	Recent Trends In Adult And Continuing Education	2017			
		MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2017	√		√
		MAAE-2.3	Research Methods In Adult Education	2017	√		√
		MAAE-2.4	Field Work & Practical Assignments	2017	√		√
		MAAE-2.5	Management Of Adult/Continuing Education	2017			
		MAAE-2.6	Human Values And Professional Ethics-II	2017			
		MAAE-3.1	Training In Adult And Continuing Education	2017	√		√
		MAAE-3.2	Comparative Studies In Adult Education	2017			
		MAAE-3.3	Material Development For Adult& Continuing Education	2017			√
		MAAE-3.4A	Peoples' Participation And Development	2017	√		
		MAAE-3.4B	Vocational Education & Training	2017	√		
		MAAE-3.4C	Guidance And Counselling In Adult/Continuing Education	2017			
		MAAE-3.4D	Inclusive Education	2017			
		MAAE-3.5A	Information Technology For Continuing Education	2017			
		MAAE-3.5B	Entrepreneurship Development	2017	√	√	
		MAAE-3.5C	Women's Education & Development	2017			
		MAAE-4.1	Monitoring & Evaluation	2017	√		
		MAAE-4.2	Human Resources Management& Development	2017			√
		MAAE-4.3	Dissertation / Project Work	2017			
		MAAE-4.4 A	Environmental Education	2017			
		MAAE-4.4 B	Statistical Methods For Social Research	2017			√
		MAAE-4.4 C	Development Strategies & Voluntarism	2017	√		
	MAAE-4.4 D	Population Education	2017				
	MAAE-4.5 A	Adult Education And Extension	2017				
	MAAE-4.5 B	Skill Development Initiatives	2017				
	MAAE-4.5 C	Career Guidance And Counselling	2017				
	Rural Development	MARDM-1.3	Indian Economic Science	2017	√		
MARDM-2.1		Ruaral Industrialisation	2017	√		√	
MARDM-2.3		Agriculture & Rural Bio Technology	2017			√	
MARDM2.4		Field Work& Practicals	2017			√	
MARDM-2.5		Rural Marketing & Management	2017		√		

		MARDM-3.1	Natural Resources Management -Land	2017	√		√
		MARDM3.2	Natural Resources Management -Water	2017	√		√
		MARDM-3.3	Natural Resources Management-Vegetation	2017	√	√	√
		MARDM-3.4a	Communications For Rural Development	2017			√
		MARDM3.4b	Micro Finance & Women Empowerment	2017	√		√
		MARDM-1.4c	Economics Of Agriculture	2017		√	
		MARDM3.5b	Skill Development Initiatives	2017			√
		MARDM-4.1	Agriculture And Rural Development	2017	√	√	
		MARDM-4.2	Rural Credit & Marketing	2017	√	√	
		MARDM4.3	Dissertation/Project Work	2017	√		√
		MARDM-4.1c	Rural Entrepreneurship	2017		√	
		MARDM- 4.1d	Vocational Education & Training	2017	√	√	√
		MARDM-5.1a	Human Resources Development In Rural Sectors	2017	√		√
2	AIHC & Archaeology	AIHC&A-101	History of Ancient India upto 550 A.D.	2017			
		AIHC&A-102	History of India from 1206 A.D. to 1526 A.D.	2017			
		AIHC&A-103	History of Andhras upto 1323 A.D.	2017			
		AIHC&A-104	Ancient World Civilizations.	2017			
		AIHC&A-105A	Principles and Methods of Archaeology.	2017			√
		AIHC&A-105B	Advanced Archaeological theory and Research Methodology.	2017	√		
		AIHC&A-106A	Social and Political Institutions in Ancient India	2017			
		AIHC&A-106B	Indian Religious Movements.	2017			
		AIHC&A-107	Human Values and Professional Ethics-I.	2017			
		AIHC&A-201	History of India from 550 A.D to 1206 A.D.	2017			
		AIHC&A-202	History of Medieval India from 1526 A.D to 1707 A.D.	2017			
		AIHC&A-203	History of South India from 1323 A.D. to 1724 A.D.	2017			
		AIHC&A-204	Pre and Proto Historic Cultures of India	2017	√		
		AIHC&A-205A	History of Indian Archaeology	2017	√		√
		AIHC&A-205B	Cultural Heritage Management	2017			
		AIHC&A-206 A	India's Early Cultural Contacts with other Countries	2017			
		AIHC&A-206 B	Early History of South East Asia	2017			
		AIHC&A -207	Human Values and Professional Ethics-II	2017			
		AIHC&A-301	History of Indian Architecture	2017	√		
		AIHC&A-302	Epigraphy	2017			√
		AIHC&A-303A	History of Modern Andhra from 1724 A.D. to 1956 A.D.	2017			
		AIHC&A-303B	Historiography and Historical Method	2017			
		AIHC&A-303C	Laboratory Methods in Scientific Archaeology	2017			√
		AIHC&A-303D	Temple Studies	2017			
		AIHC&A -304	Soft Skills in Archaeology	2017	√		√
		AIHC&A-305A	Outlines of Indian History	2017			
		AIHC&A-305B	Women in Indian History	2017			
		AIHC&A-401	History of Indian Art	2017			√

		AIHC&A-402	Numismatics	2017			√
		AIHC&A-403A	Museology	2017			√
		AIHC&A-403B	Historical Applications in Tourism	2017	√		
		AIHC&A-403C	Tour Guiding and Management	2017	√		
		AIHC&A-403D	Conservation of Cultural Property	2017			√
		AIHC&A-404	History of Science and Technology in Ancient India	2017			
		AIHC&A-405A	Introduction to Indian Archaeology	2017			
		AIHC&A-405B	History of Vijayanagara Empire	2017			
		SEAP 104	Ancient Indian History	2017	√		
3	Area Studies Programme	SEAP 203	Regional Geography of South Pacific and East Asia	2017			√
	MA Tourism	T 102	Planning and Development of Tourism	2017	√		
4	Centre for Extension Studies						
5	Centre for Gandhian Studies						
6	Centre for Womens Studies	SVUWS 101	Women's Studies- concepts, Principals & Issues	2017-18	√		√
		SVUWS 102	Health and Nutritional perspectives of women	2017-18	√	√	√
		SVUWS 103	Entrepreneurship Management & Development	2017-18	√	√	√
		SVUWS 104	Computer Applications: MS-word, MS-Excel, MS-Power-point	2017-18	√	√	√
		SVUWS 105A	Gender, environment, climate change & livelihood	2017-18	√		√
		SVUWS 105B	Gender Society and Power relations	2017-18			√
		SVUWS 105C	Social Process and Behavioral Issues	2017-18	√		√
		SVUWS-106A	Human Values And Ethics –I	2017-18			√
		SVUWS-106	Leadership values	2017-18	√	√	√
		SVUWS 201	Women & Development	2017-18	√		√
		SVUWS 202	Research Methodology & SPSS	2017-18	√	√	√
		SVUWS 203	Sales and Marketing Management with focus on Gender	2017-18	√	√	√
		SVUWS 204	Skills Development Training – C Language, DBMS, Communication & Soft Skills	2017-18	√	√	√
		SVUWS 205A	Capacity building and leadership Training	2017-18	√	√	√
		SVUWS 205B	Gender & Media	2017-18	√	√	√
		SVUWS 205C	Social Work initiatives for women's Development	2017-18	√		√
		SVUWS-206A	6 a. Human values & Professional Ethics –II	2017-18			√
		SVUWS-206B	6 b. Familial values and Ethics	2017-18			√
		SVUWS 301	Gender, Science & Technology	2017-18	√		√
		SVUWS 302	C++ & E-Commerce	2017-18	√	√	√
		SVUWS 303	Human Resource planning & Development With focus on Gender Perceptions	2017-18	√	√	√
		SVUWS-304A	NGO Management	2017-18	√	√	√
		SVUWS-304B	Guidance & Counseling With Gender Perceptions.	2017-18	√	√	√
		SVUWS-304C	Feminist theories, Women's, Status & Empowerment.	2017-18			√

		SVUWS-304D	Women's participation in Agriculture & Allied sectors	2017-18	√		√
		SVUWS-305A	Gender Sensitization & Training	2017-18	√	√	√
		SVUWS-305B	Gender Identity and Leadership	2017-18	√	√	√
		SVUWS-305C	Women and Governance	2017-18	√	√	√
		SVUWS 401	Documentation & Project Work with Gender perception	2017-18		√	√
		SVUWS 402	Accounting & Financial Management, Tally	2017-18	√	√	√
		SVUWS 403	Participatory learning, Extension & outreach programs & Advocacy with focus on women	2017-18	√		√
		SVUWS 404A	Legal and Human Rights of Women	2017-18	√		√
		SVUWS 404B	Human Resource Management With focus on Gender Perceptions	2017-18	√	√	√
		SVUWS 404C	Multimedia systems	2017-18	√	√	√
		SVUWS 404D	Reproductive Health and Family Life Education	2017-18	√		√
		SVUWS 405A	Technical communication and computer ethics	2017-18	√	√	√
		SVUWS 405B	Gender & Mass Communication		√	√	√
7	Econometrics	EMT 101	Microeconomic Theory I	2017-18			
		EMT 102	Macroeconomic Theory I	2017-18			
		EMT 103	Mathematical Methods	2017-18	√		√
		EMT 104	Practical I	2017-18			
		EMT 105	Statistical Methods	2017-18	√	√	
		EMT 106	Human Values and Professional Ethics-I	2017-18			
		EMT 201	Microeconomic Theory II	2017-18			
		EMT 202	Macroeconomic Theory II	2017-18			
		EMT 203	Basic Econometrics	2017-18	√		
		EMT 204	Practical II	2017-18			
		EMT 205	Mathematical Economics	2017-18	√		
		EMT 206	Human Values and Professional Ethics II	2017-18			
		EMT 301	Indian Economy	2017-18			
		EMT 302	Economics of Insurance	2017-18	√		
		EMT 303	Advanced Econometrics	2017-18			
		EMT 304	Computer Applications and Data	2017-18	√		√
		EMT 308	Introduction to Econometrics	2017-18	√		
		EMT 309	Indian Economy	2017-18			
		EMT 310	Economics of Insurance	2017-18	√		
		EMT 401	International Trade and Finance	2017-18			
		EMT 402	Environmental Economics	2017-18			
		EMT 403	Applied Econometrics	2017-18		√	
		EMT 406	Practical IV	2017-18			
			Environmental Economics	2017-18	√		
		EMT 407	Project	2017-18			

		EMT 408	Optimization Techniques in Economics	2017-18	√		√
		EMT 409	Data Base for the Indian Economy	2017-18			√
		EMT 410	Actuarial Statistics	2017-18			
8	Economics	101	Micro-Economic Analysis – I	2017-18			
		102	Macro-Economic Analysis - I	2017-18			
		103	Public Economics	2017-18			
		104	Mathematical Methods in Economics	2017-18			
		105	Fundamentals of Computers	2017-18	√	√	
		106	Human Values and Professional Ethics - I	2017-18			
		201	Micro-Economic Analysis – II	2017-18			
		202	Macro-Economic Analysis - II	2017-18			
		203	Federal Finance	2017-18			
		204	International Trade: Theory and Policy	2017-18			
		205	Statistical Methods in Economics	2017-18	√		√
		206	Human Values and Professional Ethics - II	2017-18			
		301	Economics of Growth and Development	2017-18			
		302	Indian Economy	2017-18			
		303	Economics of Environment	2017-18	√		
		304(a).	International Finance	2017-18			
		304(b).	Agricultural Economics	2017-18			
		304(c).	Demography	2017-18	√		
		304(d)	Human Resource Development	2017-18	√		
		305(a).	Urban Economics	2017-18	√		
		305(b).	Economics of Infrastructure	2017-18			
		305(c).	Economics of Insurance	2017-18			
		401	Rural Development	2017-18			
		402	Financial Institutions and Markets	2017-18	√		
		403	Industrial Economics	2017-18			
		404(a)	India's Economic Reforms	2017-18			
		404(b).	Andhra Pradesh Economy	2017-18			
		404(c).	Entrepreneurship and Skill Development	2017-18			
		404(d).	Labour Economics	2017-18			
		405(a).	Women and Economic Development	2017-18			
		405(b).	Economics of Tourism	2017-18	√	√	
		405(c).	Tribal Economy	2017-18			
9	Education	101	Perspectives of Educational Psychology	2017	✓		✓
		102	Educational Studies	2017	✓		✓
		103	Fundamentals of Educational Research	2017	✓	✓	✓
		104	Teacher Education	2017	✓	✓	✓

		105	Foundations of Educational Philosophy	2017	✓		✓
		106	Measurement and Evaluation	2017	✓	✓	✓
		201	Educational Planning and Management	2017	✓		✓
		202	Advanced Educational Research	2017	✓	✓	✓
		203	Guidance and Counseling	2017	✓	✓	✓
		204	Issues and Research in Teacher Education	2017	✓		✓
		205	Foundations of Educational Sociology	2017	✓		✓
		206	Secondary Education	2017	✓		✓
		301	Information and Communication Technology in Education	2017	✓	✓	✓
		302	Comparative Education	2017	✓		✓
		303	Inclusive Education	2017	✓	✓	✓
		304-C	Environmental Education	2017	✓		✓
		304-D	Life Skills Education	2017	✓	✓	✓
		305-A	Teaching Strategies for Teachers	2017	✓	✓	✓
		401	Advanced Educational Technology	2017	✓		✓
		402	Psychology – Learner and Life	2017	✓	✓	✓
		403	Environmental Concerns in Secondary Education	2017	✓		✓
		404-A	Human Values and Professional Ethics	2017	✓	✓	✓
		404-B	Lifelong Education	2017	✓		✓
		405-A	Personality Development and Soft Skills	2017	✓	✓	✓
10	English	105	English Language	2017	✓		
		205	English Language Teaching	2017	✓		✓
		305 D	Indian Literature in English	2017	✓		✓
		305 (A)	Communicative English	2017			✓
		305(B):	English for Media	2017	✓		✓
		305(C):	An Introductory Course to Literature	2017	✓		
		404(A):	Translation: Theory and Practice	2017	✓		
		405(A)	Soft Skills	2017	✓		✓
11	Foreign Languages and Linguistics	LING-101	Language and Linguistics	2017	√	√	√
		LING-102	Phonetics	2017		√	
		LING-103	Phonology	2017		√	
		LING-104	Morphology	2017		√	
		LING-105	Syntax	2017		√	
		LING-106	Human Values and Professional Ethics-I	2017	√	√	√
		LING-201	Semantics	2017		√	
		LING-203	Dialectology	2017		√	
		LING-204	Field Linguistics	2017	√	√	√
		LING-205	Language families of India and Comparative Dravidian(Phonology)	2017		√	

		LING-206	Human Values Professional Ethics-II	2017	√	√	√
		LING-301	Sociolinguistics	2017	√	√	
		LING-302	Language Contact	2017	√	√	
		LING-303	Communication Disorders and Speech Pathology	2017	√	√	√
		LING-304A	Psycho-linguistics	2017	√	√	√
		LING-304B	Communication Technology	2017	√	√	√
		LING-304C	Endangered Languages	2017			
		LING-304D	Computational Linguistics	2017	√	√	√
		LING-304E	Applied Linguistics	2017	√	√	√
		LING-305B	Bilingualism	2017	√	√	√
		LING-305C	Structure of English	2017	√	√	√
		LING-401	Language Acquisition and Child Language Development	2017	√	√	√
		LING-404B	Language Teaching	2017	√	√	√
		LING-404C	Translation	2017	√	√	√
		LING-405A	Branches of Linguistics	2017	√	√	
		LING-405C	Mass Media Communication	2017	√	√	√
12	Hindi	HIN-101	Aadhunik Hindi Kavita	2017			
		HIN-102	Hindi Gadhya Sahitya	2017			
		HIN-103	Bhasha Vignan	2017	√		
		HIN-104	Anuvad Vignan aur Paribhashik Shabdavali	2017	√		
		HIN-105	Hindi Sahitya Ka Ithihas	2017			
		HIN-106	Human Values & Professional Ethics-	2017			
		HIN-201	Samkaleen Hindi Kavita	2017			
		HIN-202	Hindi Ka Vaicharik Sahitya	2017			
		HIN-203	Hindi Bhasha	2017			
		HIN-204	Prayojanmulak Hindi	2017	√		√
		HIN-205	Aadhunik Hindi Sahitya Ka Ithihas	2017			
		HIN-303 D	Pravasi Sahitya	2017	√		
		HIN-304	Bhasha Shikshan ke Sidhantaaur Prayog	2017	√		
		HIN-305 A	Vyavharik Hindi Vyakaran	2017	√		
		HIN-305 B	Hindi Sahitya ke Nirmata	2017			
		HIN-401	Bhartiya Tulnatmak Sahitya	2017	√		
		HIN-402	Paschatya Samiksha Shastra	2017			√
		HIN-403 A	Anudit Bhartiya Sahitya	2017			√
		HIN-403 B	Asmitamulak Sahitya Vimarsha	2017			
		HIN-403 C	Sahitya ka Tulnatmak Adhayayan	2017	√		√
		HIN-403 D	Anusandhan ke Sidhanta aur Dristiya	2017			√
		HIN-404	Antar Jananushasnatmak Dristiyaaur And Pravidhiya	2017			
		HIN-405 A	Manak Hindi aur Nagrilipi	2017			√
		HIN-405 B	Aadhunik Hindi Sahitya ke Nirmata	2017			
13	History	HST -101	Historical Method and Concepts	2017			

		HST 102	History of Modern World, C.1900-1945	2017			
		HST 103	History of India Up to AD 650	2017			
		HST 104	History of Indian Polity and Economy, 1206-1757	2017	✓		
		HST 105	Political History of India, 1757-1857	2017			
		HST 106	Human Values and Professional Ethics- I	2017			
		HST 201	Historiography	2017			
		HST 202	History of Contemporary World, C.1945-2000	2017	✓		
		HST 203	History of India, AD 650-1206	2017			
		HST 204	Social and Cultural History of India, 1206-1757	2017	✓		
		HST 205	Social and Economic History of India, 1757-1857	2017			
		HST 206	Human Values and Professional Ethics-II	2017			
		HST 301	History of South Indian,1323-1724	2017			
		HST 302	Contemporary History of India-I	2017	✓		
		HST 303	History of USA, 1776- 1965	2017			
		HST 304 a	History of Andhra, 1766- 1857	2017			
		HST 304 b	Theoretical Concepts of Tourism	2017	✓		
		HST 304 c	Women Studies in Modern India	2017			
		HST 304 d	History of World Civilizations-1	2017	✓		
		HST 305 a	Indian Foreign Policy: An Introduction	2017	✓		
		HST 305 b	Constitutional History of India, 1773- 1950	2017	✓		
		HST 401	Freedom Movement in India, 1857 – 1947	2017	✓		
		HST 402	Contemporary History of India- II	2017			
		HST 403	History ofUSA,1865-1963	2017	✓		
		HST 404 a	History of Andhra, 1857 - 1972	2017			
		HST 404 b	Historical Application of Tourism in India	2017	✓		
		HST 404 c	Environmental History of Modern India	2017			
		HST 404 d	History of World Civilizations -II	2017			
		HST 405 a	International Relations and Organizations	2017	✓		✓
		HST 405 b	An Introduction to Indian Art	2017			
14	Human Rights and Social Development	HR – 101	Human Rights: Concepts And Theoretical Perspectives	2017			
		HR – 102	Human Rights In India The Constitutional And Legal Framework	2017	✓		
		HR – 103	Human Rights And The Implementation Machinery	2017	✓		✓
		HR – 104	Human Rights And The Implementation Machinery	2017			
		HR – 105 (A)	Working Class And Human Rights And Duties	2017	✓		
		HR – 105 (B)	Human Rights Education, Teaching And Training	2017	✓		✓
		HR – 106 (A)	Human Rights Activism And Role Of Nongovernmental Organizations	2017	✓		✓
		HR – 106 (B)	Social Movements And Human Rights In India	2017	✓		
		HR - 107	Human Movements And Human Rights In India	2017			
		HR – 201	Human Rights And Indian Polity	2017			
		HR – 202	Emerging Dimensions Of Human Rights	2017			

		HR – 203	Human Rights : The International Context	2017	✓		
		HR – 204	Research Methodology, Statics And Computer	2017	✓		✓
		HR – 205 (A)	Human Rights – The Socio Economic Context	2017			
		HR – 205 (B)	Societal Problems Of Human Rights In India	2017			
		HR – 206 (A)	Human Rights And Criminal Justice System	2017	✓		✓
		HR – 206 (B)	Media And Human Rights	2017	✓		✓
		HR – 301	Social Movements And Human Rights And Duties	2017			
		HR – 302	Science, Technology, Human Rights And Duties	2017	✓		
		HR – 303 (A)	Human Rights And Duties – Advocacy And Extension work	2017	✓		
		HR – 303 (B)	Socially / Economically Disadvantaged People And Human Rights And Duties	2017			
		HR – 303 (C)	Human Duties And Responsibilities	2017			
		HR – 303 (D)	Children And Human Rights And Duties	2017			
		HR – 304	Soft Skills	2017	✓		✓
		HR – 305 (A)	Histoical And Philosophical Perpectivs And Human Rights	2017			
		HR – 305 (B)	Human Rights And Duties In India	2017	✓		
		HR – 401	human rights in andhra pradesh	2017			
		HR – 402	development, trade and hyuman rights	2017			
		HR – 403 (A)	international, humanitarian and refugee laws	2017			
		HR – 403 (B)	environment and human rights and duties	2017	✓		
		HR – 403 (C)	human rights and criminal justice system	2017			
15	Law	LAW-101	Mass Media Law	2017	✓	✓	✓
		LAW-102	Public Utilities Law	2017		✓	✓
		LAW103	Law and Social Transformation in India	2017	✓	✓	✓
		LAW-104	Indian Constitutional Law, The New Challenges.	2017	✓	✓	✓
		LAW-201	Union State Finance Relations	2017	✓	✓	✓
		LAW-202	Constitutionalism, Pluralism and Federalism	2017	✓	✓	✓
		LAW-203	Judicial Process	2017	✓	✓	✓
		LAW-204	Legal Education and Research Methodology	2017	✓	✓	✓
		LAW-301	Human Rights	2017	✓	✓	✓
		LAW-302	National Security, Public Order and Rule of Law	2017	✓	✓	✓
		LAW-303	Practical Training	2017	✓	✓	✓
		LAW-304 a	Environment Protection and the Law	2017	✓	✓	✓
		LAW-304b	Intellectual Property Rights Law	2017	✓	✓	✓
		LAW-305 a	Cyber Crimes and Law	2017	✓	✓	✓
		LAW305 b	Evolution and Concept of ADR	2017	✓	✓	✓
		LAW401	Dissertation and Viva- Voce	2017	✓	✓	✓
		LAW-402 a	Law and Consumer Protection	2017	✓	✓	✓
		LAW -402 b	International Human Rights (MOOC/Online)	2017	✓	✓	✓
16	Library and Information Science	Lis-101	Foundation of Library and Information Science	2017			✓
		Lis-102	Knowledge Organization : Classification Theory	2017	✓		✓
		Lis-103	Knowledge Organization : Classification Practice	2017	✓		✓

		Lis-104	Knowledge Management	2017		✓	✓
		Lis-105	Introduction to Information Technology	2017	✓		✓
		Lis-201	Information Sources and Services	2017			✓
		Lis-202	Knowledge Organization : Cataloguing Theory	2017	✓		✓
		Lis-203	Knowledge Organization : Cataloguing Practice	2017	✓		✓
		Lis-204	Meta Data Standards – Practice	2017	✓		✓
		Lis-205	Library Management	2017	✓		✓
		Lis-206	Human Values and Professional Ethics – II	2017			✓
		Lis-301	Information Processing and Retrieval Theory	2017	✓		✓
		Lis-302	Library Automation and Digital Library	2017	✓		✓
		Lis-303	Search and search strategies	2017			✓
		Lis-304A	User Studies	2017			
		Lis-304B	Internship	2017	✓		✓
		Lis-304C	Academic Library System	2017	✓		✓
		Lis-304D	Special Library System	2017	✓		✓
		Lis-305A	Information Literacy	2017			✓
		Lis-305B	Information and Communication	2017			✓
		Lis-401	Research Methodology	2017			✓
		Lis-402	Software for Libraries-Practice	2017	✓		✓
		Lis-403	Dessertation/Project Work	2017	✓		✓
		Lis-404A	Management of Information System	2017			✓
		Lis-404B	Museums and Archives	2017			
		Lis-404C	Information Processing and Retrieval:UDC and Indexing Practice	2017	✓		✓
		Lis-404 D	Marketing of Information Products and Services	2017			✓
		Lis-405 A	Information Systems and Programmes	2017			✓
		Lis-405B	Foundation of Library and Information Science Knowledge Organization : Classification Theory	2017			✓
17	Mass Communication & Journalism						
18	Performing Arts	PAM-105 (P)	Foundation Course in Music -1 (P)	2017			✓
		PA-M 204 (P)	Vilambakala Kritis	2017	✓		✓
		PA-M 205 (p)	Compulsory Foundation in Music -2	2017			✓
		PA-M 302	Compositions in Rare ragas	2017	✓		✓
		PA-M 303	Concert	2017	✓	✓	✓
		PA-M 402	Ragam Tanam Pallavi	2017	✓		✓
		PA-M 403	Project work	2017	✓		✓
		PA-M 404A	Manodharma Sangeetha	2017	✓		✓
		PA-M 404C	Compositions of Dance Repertoire	2017	✓	✓	✓
19	Philosophy	PHL- 101	Logic: Indian and Western	2017			✓
		PHL -102	Epistemology – Indian	2017			
		PHL -103	Classical Indian Philosophy	2017	✓		✓

		PHL -104	Problems in Metaphysics	2017			
		PHL -105	Western Philosophy: Greek and Medieval	2017			
		PHL -106	Human Values and Professional Ethics -I	2017			
		PHL- 201	Ethics – Indian	2017	✓		
		PHL- 202	Ethics – Western	2017	✓		
		PHL- 203 - A	Modern Indian Thought	2017			
		PHL- 203 - B	Modern Western Philosophy	2017			
		PHL- 203 - C	Nyaya Sutras	2017			✓
		PHL- 204	Philosophy of Education	2017			
		PHL- 205	Human Values and Professional Ethics -II	2017			
		PHL- 301	Social and Political Philosophy	2017	✓		✓
		PHL- 302	Analytical Philosophy	2017	✓		
		PHL- 303	Philosophy of Vedanta	2017	✓		
		PHL- 304 - A	Philosophical Approach to Gandhi	2017			
		PHL- 304 - B	Philosophy of B.R Ambedkar	2017	✓		
		PHL- 304 - C	Philosophy of Religion	2017			
		PHL- 305- A	Philosophy of Yoga	2017		✓	✓
		PHL- 305- B	Eco - Philosophy	2017			✓
		PHL- 401	Phenomenology and Existentialism	2017			✓
		PHL- 402	Comparative Religion	2017			✓
		PHL- 403	Sri Vaishnavism	2017			
		PHL- 404 - A	Philosophy of Peace	2017	✓		✓
		PHL- 404 - B	Research Methodology and	2017	✓		✓
			Computer Applications				
		PHL- 404 - C	Introduction to Philosophy of Mind	2017			
		PHL- 405 - A	Sri Venkateswara Studies	2017			
		PHL- 405 - B	Philosophy of Value Education	2017	✓		
20	Physical Education						
		CC-101	History, Principles and foundations of Physical Education	2017			
		CC-102	Anatomy and Physiology	2017			
		CC-103	Educational Technology and methods of teaching in Physical Education	2017		✓	✓
		EC-111	Communication & Soft skills	2017			
		EC-112	Olympic Movement	2017			✓
		PC-121	Track and Field (Running Events), *Gymnastics/*Swimming (* Any one)	2017			✓
		PC-122	Football, Tennis, Throwball	2017		✓	✓
		PC-123	Badminton, Kho-Kho, Shooting	2017		✓	✓
		PC-124	Mass Demonstration Activities: Flag Hoisting, March past, Calisthenics, Lezium Dumb-bells, Kolatam, Aerobics Wands, Hoops, Pole Drill, Folk Songs & Patriotic Songs	2017			

		CC-201	Kinesiology and Biomechanics	2017		✓	✓
		CC-202	Health Education and Environmental Studies	2017			✓
		CC-203	Measurement and Evaluation in Physical Education	2017			✓
		EC-211	Computer Applications in Physical Education	2017			
		EC-212	Recreation and Leisure Management	2017			
		PC-221	Track and Field (Jumping Events)	2017			
			* Gymnastics/*Swimming (* Any one)				✓
							✓
		PC-222	Yoga, Ball Badminton, Kabaddi	2017			✓
		PC-223	Hockey, Handball, Cricket	2017			✓
		TP-231	Teaching Practice (Class room and Outdoor)	2017			✓
				(4 internal and 1 External in class room and outdoor)			
21	Political Science & Public Administration	PSPA 101	Constitution Making - Indian Experience	2017	✓	✓	✓
		PSPA 105 (b)	Indian Political Thought	2017	✓	✓	
		PSPA 103	Modern Political Analysis	2017	✓	✓	✓
		PSPA105 (c)	Public Relations& Mass Communication	2017	✓	✓	✓
		PSPA106 (a)	Dynamics of Public Administration	2017	✓	✓	✓
		PSPA106 (b)	Globalization and Indian Political Economy	2017	✓	✓	✓
		PSPA 201	Administrative Theories	2017		✓	✓
		PSPA 202	Research Methodology	2017	✓	✓	✓
		PSPA 203	Indian Government and Politics	2017	✓	✓	✓
		PSPA 204	Public Policy	2017	✓	✓	✓
		PSPA205 (a)	Indian National Movement	2017	✓	✓	✓
		PSPA205 (b)	Public Enterprises in India	2017	✓	✓	✓
		PSPA 205 (c)	Administrative Techniques	2017	✓	✓	✓
		PSPA 206 (b)	International Administration	2017	✓		✓
		PS303(a)	Good Governance and Information Technology	2017	✓	✓	✓
		PS 304	Personality Development and Employment	2017	✓	✓	✓
		PS305(a)	Social Movements in India	2017	✓		
		PA 301	Public Personnel Administration	2017	✓		✓
		PA303(b)	Issues in Indian Administration	2017	✓		✓
		PA303(d)	Political Dynamics	2017		✓	✓
		PA 305(b)	Indian Polity and Governance	2017	✓	✓	✓
		PS 401	India's Foreign Policy-Continuity, Changes and Emerging Challenges	2017	✓		✓
		PS 402	Center-State Relations in India	2017	✓		✓
		PS 403(b)	E-Governance	2017	✓	✓	✓
		PS 405(b)	Women and Politics	2017	✓	✓	✓

		PA 401	Human Resource Management	2017	✓	✓	✓
		PA 402	Financial Administration	2017	✓	✓	✓
		PA 403(c)	Disaster Management	2017	✓	✓	✓
		PA 403(d)	Office Management	2017	✓	✓	✓
		PA 405(a)	Indian Constitution	2017	✓		
		PA 405(b)	Banking Management	2017	✓	✓	✓
22	Population Studies	PSC-101	Population Characteristics and Theories	2017	✓	--	✓
		PSC-102	Fertility	2017	✓	--	✓
		PSC-103	Mortality	2017	✓	--	✓
		PSC-104	Sources, Evaluation and Adjustment of Data	2017	✓	✓	✓
		PSC-105	Population Education and Extension	2017	✓	--	✓
		PSC-106	Human Values & Professional Ethics-I	2017	--	--	✓
		PSC - 201	Migration and Multi Regional Demography	2017	--	--	✓
		PSC - 202	N.G.O Management	2017	✓	✓	✓
		PSC - 203	Statistical Methods	2017	✓	✓	✓
		PSC - 204	Population Sociology	2017	✓	--	✓
		PSC – 205	Population and Sustainable Development	2017	✓	--	✓
		PSC - 206	Human Values and Professional Ethics -II	2017	--	--	✓
		PSC - 301	Population Geography	2017	✓	✓	✓
		PSC - 302	Research Methodology	2017	✓	✓	✓
		PSC - 303	Community Health	2017	✓	--	✓
		PSC – 304 A	Population Psychology	2017	✓	--	✓
		PSC – 304 B	Population Policies and Programmes	2017	✓	--	✓
		PSC – 304 C	Georontology	2017	✓	✓	✓
		PSC – 304 D	Population and Sustainable Developemnt	2021	✓	--	--
		PSC – 305 A	Principles of Population Studies	2017	✓	--	--
		PSC – 305 B	Population, Society and Environment	2017	✓	--	✓
		PSC - 401	Communication For Family Welfare Programmes	2017	✓	--	✓
		PSC - 402	Reproductive Health and Adolescent Issues	2017	✓	--	✓
		PSC - 403	Population Growth and Development	2017	✓	--	--
		PSC – 404 A	Field Work Practice and Dissertation	2017	✓	✓	✓
		PSC – 404 B	Demography of Andhra Pradesh	2017	✓	--	--
		PSC – 404 C	Social Work in Industry and Human Resource Management	2021	✓	--	✓
		PSC – 404 D	Health Economics	2017	✓	--	✓
		PSC – 405 A	Rural, Urban, Tribal Development	2017	✓	--	✓
		PSC – 405 B	Social policies and planning	2017	✓	--	✓
	Social Work	MSW-101	Sociology for Social Work	2017	✓	--	--
		MSW-102	Human growth and Personality Development	2017	✓	--	✓
		MSW-103	Social Work Profession & Field Work Orientation-1	2017	✓	✓	✓
		MSW-104	Social Work practice with Individuals & Groups	2017	✓	--	✓
		MSW-105	Social Work Practicum-I	2017	--	--	✓

MSW-106	Human Values & Professional Ethics-I	2017	--	--	✓
MSW - 201	Social Work Profession and Field Work Orientation-II	2017	✓	✓	✓
MSW - 202	Social Work Practice with Communities	2017	✓	✓	✓
MSW - 203	Social Action and Social Legislation for Social Work Practice	2017	✓	--	✓
MSW - 204	Social Policy and Planning	2017	✓	--	✓
MSW - 205	Social Work Practicum-II	2017	--	--	✓
MSW - 206	Human Values and Professional Ethics -II	2017	--	--	✓
MSW - 301	Social Work Intervention With Families	2017	✓	--	✓
MSW - 302	Social Work in the Field of Health	2017	✓	--	✓
MSW - 303	Counseling in Social Work Practice	2017	✓	✓	✓
MSW - 304 A	Social work Research	2017	✓	✓	✓
MSW - 304 B	Gerontological Social Work	2017	✓	✓	✓
MSW - 304 C	Social Work Practicum-III	2017	--	--	✓
MSW - 304 D	Human Rights and Social Legislation	2017	✓	✓	✓
MSW - 305 A	Principles of Population Studies	2017	✓	--	✓
MSW - 305 B	Fundamentals of Social Work	2017	✓	✓	✓
MSW - 401	Social Work Intervention With Children	2017	✓	--	✓
MSW - 402	Rural/Urban/Tribal Development & Empowerment -I	2017	✓	--	✓
MSW - 403	Social Work in the Field of Mental Health	2017	✓	--	✓
MSW - 404 A	Social Work in Industry & Human Resource Management	2017	✓	--	✓
MSW - 404 B	Social Work Practicum-IV	2017	--	--	✓
MSW - 404 C	Social Work Practicum-V	2017	--	--	✓
MSW - 404 D	Social Work and Disaster Management	2017	✓	--	✓
MSW - 405 A	Rural, Urban, Tribal Development	2017	✓	--	✓
MSW - 405 B	Social policies and planning	2017	✓	--	✓
23	Sanskrit	SNSKT 101	Elements of Darsanas-I	2017	
		SNSKT 102	Vedic Texts-I	2017	✓
		SNSKT 103	Prose And Poetry -I	2017	
		SNSKT 104	Drama, Alankara and Prosody-I	2017	
		SNSKT 105	History of Sanskrit Literature-I	2017	
		SNSKT 106	Human Values and Professional Ethics-I	2017	
		SNSKT 201	Elements of Darsanas-II	2017	✓
		SNSKT 202	Vedic Texts-II	2017	✓
		SNSKT 203	Prose And Poetry -II	2017	
		SNSKT 204	Drama, Alankara and Prosody-II	2017	
		SNSKT 205	History of Sanskrit Literature-II	2017	
		SNSKT 206	Human Values and Professional Ethics-II	2017	
		SNSKT 301	(Sahitya)-Rasagangadhara-I	2017	
		SNSKT 302	(Sahitya)-Dhvanyaloka-I	2017	
		SNSKT 303	(Sahitya)-KavyaPrakasa of Mammata and Dasarupaka-I	2017	

		SNSKT 304(A)	Comparative Philology And Siddhanta Kaumudi-I	2017			
		SNSKT 304(B)	History of Sanskrit Poetics And Sanskrit Essay	2017			
		SNSKT 304©	Natyasastram	2017	✓		✓
		SNSKT 401	(Sahitya)-Rasagangadhara-II	2017			
		SNSKT 402	(Sahitya)-Dhvanyaloka-II	2017			
		SNSKT 403	(Sahitya)-KavyaPrakasa of Mammata and Dasarupaka-II	2017	✓		
		SNSKT 404(A)	Comparative Philology And SiddhantaKaumudi-II	2017			
		SNSKT 404(B)	History of Sanskrit Poetics And Sanskrit Essay	2017			
		SNSKT 404(C)	Kavyadarsah	2017			
24	Sociology	MASO-102	Sociological Research methods	2017	✓	✓	
		MASO-104	Participatory Research	2017	✓	✓	
		MASO-201	Applied Sociology	2017	✓	✓	
		MASO-203	Rural Sociology and Development	2017	✓	✓	
		MASO-204	Extension Work	2017	✓	✓	
		MASO-205	Environmental Sociology	2017	✓	✓	
		MASO-301	Medical Sociology	2017	✓	✓	
		MASO-303	Field Work and Extention Work (Village Placement)	2017	✓	✓	
		MASO-304-A	Human Rights	2017	✓	✓	
		MASO-304-C	Gerontology	2017	✓	✓	
		MASO-305-A	Social Psychology and Personality Development	2017	✓	✓	
		MASO-401	Criminology	2017	✓	✓	
		MASO-402	Industrial Dynamics	2017	✓	✓	
		MASO-403	Field Work	2017	✓	✓	
		MASO-404-A	Social Welfare and Welfare Adminstration	2017	✓	✓	
		MASO-405	Globalisation and Educational Pursuits	2017	✓	✓	
25	Tamil	TML 101	Modern Literature	2017	✓		
		TML 104	Principle of Literary Criticism - I	2017	✓		
		TML 201	Modern Literature - II	2017	✓		
		TML 204 A	Feminism	2017	✓		
		TML 303	General Linguistics	2017	✓		
		TML 304D	Folk Arts in Tamil	2017			✓
		TML 403	Comparative grammar of Dravidian Languages and History of Tamil Language	2017	✓		
		TML 404D	Folk Festivals	2017			✓
26	Telugu Studies	102	General Linguistics	2017	✓		
		105	Folk Literature	2017	✓		✓
		303	Journalism	2017	✓		
		304A	Fiction: Novel & Short Stories	2017			
		305b	Adhunika Moulukamsalu	2017	✓		

		202	Dialectology	2017			✓
		205	Folk Arts	2017			✓
		404d	Comparative Literature	2017	✓		
		405a	Folk Lore	2017	✓		✓
27	Urdu	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2017	✓		✓
		URD 304 D	Urdu Computer	2017	✓	✓	✓
		URD 404 A	Urdu Tarjuma Nigari	2017	✓		✓
		URD 404 D	Urdu Tarseel o Iblag ke Zaraye	2017	✓		✓

SVU COLLEGE OF SCIENCES

28	Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2017	✓		✓
		ANO : 102	Introduction to Biological Anthropology	2017	✓		✓
		ANO-103		2017	✓		✓
		ANO-104P	Somatometry & Somatoscopy	2017	✓		✓
		ANO 105p	Archaeological Anthropology	2017	✓		✓
		ANO 106	Economic and Political Anthropology	2017	✓		✓
		ANO 107	Human Values and Professional Ethics -I	2017	✓		✓
		ANO 201	Comparative Ethnography and Indian Anthropology	2017	✓		✓
		ANO 202	Principals of Genetics	2017	✓		✓
		ANO 203	Research Methods in Anthropology	2017	✓		✓
		ANO 204P	Craniology and Craniometry	2017	✓		✓
		ANO205P	Doing Ethnography	2017	✓		✓
		ANO206	Prehistoric India	2017	✓		✓
		ANO 207	Human Values and Professional Ethics -II	2017	✓		✓
		ANB 301	Human Evolution and Fossil Evidence	2017	✓		✓
		ANB 302	Human Genetics	2017	✓		✓
		ANB 303P	Human Osteology and Osteometry	2017	✓		✓
		ANB 304P	Dermatoglyphics	2017	✓		✓
		ANB 305	Anthropological Demography	2017	✓		✓
		ANB 306	Biostatistics and Computer Applications	2017	✓	✓	✓
		ANB 307	Forensic Anthropology	2017	✓	✓	✓
		ANB 308	Palaeoanthropology	2017	✓		✓
		ANB 401	Biological Anthropology	2017	✓		✓
		ANB-402	Human Population Genetics	2017	✓		✓
		ANB-403P	Advanced Biological Anthropology	2017	✓		✓
		ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2017	✓		✓
		ANB -405	Human Growth, Physique and Nutrition	2017	✓		✓
		ANB 406	Applied Biological Anthropology	2017	✓	✓	✓
		ANB 407	Medical Genetics	2017	✓	✓	✓
		ANB-408	Epidemiology	2017	✓	✓	✓
		ANB -409	Fundamentals of Anthropology	2017	✓		✓

		ANS 301	Theories of Culture	2017	✓		✓
		ANS 302	Social Anthropology of Complex Societies	2017	✓		✓
		ANS 303P	Participatory of Research methods in Development Process	2017	✓		✓
		ANS 304P	Non-Governmental Organizations and Extension studies	2017	✓		✓
		ANS 305	Ecological Anthropology	2017	✓		✓
		ANS 306	Applied Anthropology- Indigenous Communities	2017	✓		✓
		ANS 307	Anthropology of Religion Scared complexes in India	2017	✓		✓
		ANS 308	Anthropology and Career Promotion	2017	✓		✓
		ANS 401	Structural Anthropology	2017	✓		✓
		ANS-402	Medical Anthropology	2017	✓	✓	✓
		ANS-403P	Computer Applications	2017	✓	✓	✓
		ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2017	✓		✓
		ANS -405	Developmental Anthropology	2017	✓		✓
		ANS 406	Culture and Management	2017	✓		✓
		ANS 407	Anthropology of Displaced Populations	2017	✓		✓
		ANS-408	Visual Anthropology	2017	✓		✓
		ANS -409	Tribal Studies	2017	✓		✓
29	Biochemistry	BCH 101	Biochemical and Biophysical methods	2017	✓	✓	✓
		BCH 102	Molecular Physiology and community nutrition	2017	✓	✓	
		BCH 103P	Practical related to Biochemical Preparations and Analysis	2017	✓	✓	✓
		BCH 104P	Practical related to Analytical Methods	2017	✓	✓	✓
		BCH 105	Cell and Biomolecules	2017		✓	
		BCH 106	Human values and Professional ethics-I	2017	✓		
		BCH 201	Energy metabolism	2017		✓	
		BCH 202	Metabolism of Nitrogen based molecules	2017		✓	
		BCH 203P	Practical related to Enzymology	2017	✓	✓	✓
		BCH 204P	Practical related to Molecular Biology	2017	✓	✓	✓
		BCH 205	Human values and Professional ethics-II	2017	✓		
		BCH 206	Enzymology	2017	✓	✓	✓
		BCH 301	Microbial Biochemistry and Genetics	2017	✓	✓	✓
		BCH 302	Molecular Biology	2017	✓	✓	✓
		BCH 303P	Practical related to Microbiology	2017	✓	✓	✓
		BCH 304P	Practical related to Clinical Biochemical Analysis	2017	✓	✓	✓
		BCH 305A	Molecular Endocrinology	2017	✓	✓	
		BCH 305B	Clinical Biochemistry	2017	✓	✓	✓
		BCH 305C	Cell and Developmental Biology	2017		✓	
		BCH 306A	General Biochemistry	2017	✓	✓	
		BCH 306B	Environmental Biochemistry	2017	✓	✓	✓
		BCH 306C	Experimental aspects related to analytical methods	2017	✓	✓	✓

	BCH 401	Genetic Engineering	2017	✓	✓	✓
	BCH 402	Technical Writing, Biostatistics and Bioinformatics	2017	✓	✓	✓
	BCH 403P	Practical related to Immunology and Hematology	2017	✓	✓	✓
	BCH 404P	Practical/Project work	2017	✓	✓	✓
	BCH 405A	Immunology	2017	✓		
	BCH 405B	Applied Biochemistry	2017	✓	✓	✓
	BCH 405C	Plant Biochemistry	2017	✓	✓	
	BCH 406A	Research Methodology	2017	✓	✓	✓
	BCH 406B	Biochemistry of diseases	2017	✓	✓	✓
	BCH 406C	Nutritional Biochemistry	2017	✓	✓	✓
Immunotechnology	IMT	Biochemical and Biophysical methods	2017	✓	✓	✓
	IMT	Molecular Physiology and community nutrition	2017	✓	✓	
	IMT	Practical related to Biochemical Preparations and Analysis	2017	✓	✓	✓
	IMT	Practical related to Analytical methods	2017	✓	✓	✓
	IMT	Cell and Biomolecules	2017		✓	
	IMT	Human values and Professional ethics-I	2017	✓		
	IMT	Energy metabolism	2017		✓	
	IMT	Metabolism of Nitrogen based molecules	2017		✓	
	IMT	Practical related to Enzymology	2017	✓	✓	✓
	IMT	Practical related to Molecular Biology	2017	✓	✓	✓
	IMT	Enzymology	2017	✓	✓	✓
	IMT	Human values and Professional ethics-II	2017	✓		
	IMT	Microbial Biochemistry and Genetics	2017	✓	✓	✓
	IMT	Immunology	2017	✓		
	IMT	Practical related to Microbiology	2017	✓	✓	✓
	IMT	Practical related to Immunology	2017	✓	✓	✓
	IMT	a) Molecular Biology	2017	✓	✓	✓
	IMT	b)Molecular Endocrinology	2017	✓	✓	
	IMT	c) Cell and Developmental Biology	2017		✓	
	IMT	a) Basics of Immunology	2017	✓		
	IMT	b) Immunotechniques	2017	✓	✓	✓
	IMT	Genetic Engineering	2017	✓	✓	✓
	IMT	Technical writing, Biostatistics and Bioinformatics	2017	✓	✓	✓
	IMT	Practical related to Clinical Immunology, Biostatistics and Bioinformatics	2017	✓	✓	✓
	IMT	Practical/Project work	2017	✓	✓	✓
	IMT	a) Clinical Immunology	2017	✓	✓	✓
	IMT	b) Applied and molecular immunology	2017	✓	✓	✓
IMT	c) Immuno pharmacology	2017	✓	✓	✓	
IMT	a) Research Methodology	2017	✓	✓	✓	
IMT	b) Immunological diseases and therapeutics	2017	✓	✓	✓	

30	Botany	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2017-2018	✓		✓	
		BOT-102	Taxonomy of Angiosperms	2017-2018	✓		✓	
		BOT-103	Microbiology	2017-2018	✓		✓	
		BOT-104	Human Values and Professional Ethics - I	2017-2018		✓		
		BOT-105P	Practical-I	Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2017-2018	✓	✓	✓
			Practical-II					
		BOT-106P	Microbiology & Plant Development and Reproduction	2017-2018	✓	✓	✓	
		BOT-201	Plant Ecology	2017-2018	✓		✓	
		BOT-202	Plant Biochemistry and Plant Physiology	2017-2018	✓	✓	✓	
		BOT-203	Plant Development and Reproduction	2017-2018	✓		✓	
		BOT-204	Human Values and Professional Ethics - II	2017-2018			✓	
		BOT-205P	Practical-I	Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2017-2018	✓	✓	✓
			Practical-II					
		BOT-206P	Plant Ecology & Cell Biology, Genetics and Evolution	2017-2018	✓	✓	✓	
		BOT-301	Molecular Biology and Techniques	2017-2018	✓		✓	
		BOT-302	Biodiversity and Conservation	2017-2018	✓		✓	
		BOT-303IE	Biosystematics	2017-2018	✓		✓	
		BOT-304 IE	Molecular Plant Pathology	2017-2018	✓	✓	✓	
		BOT-306 IE	Computer Applications and Bioinformatics	2017-2018	✓	✓	✓	
		BOT-307 EE	Plants and Human Welfare	2017-2018	✓	✓	✓	
		BOT-308 EE	Organic Farming and Mushroom Cultivation	2017-2018	✓	✓	✓	
		Bot-309 EE	Gardening and Nursery Techniques	2017-2018	✓	✓	✓	
		BOT-305P	Practical-I	Molecular Biology and Techniques; Biodiversity and Conservation	2017-2018	✓	✓	✓
			Practical - II					
		BOT-306P	Biosystematics / Molecular Plant Pathology / Computer Applications	2017-2018	✓	✓	✓	
		BOT-401	Molecular Genetics, Genomics and Proteomics	2017-2018	✓			
		BOT-402	Plant Biotechnology	2017-2018	✓	✓	✓	
		BOT-403IE	Molecular Plant Physiology		✓	✓	✓	
		BOT-404IE	Horticulture and Agriculture Biology	2017-2018	✓	✓	✓	
		BOT-405IE	Ethnobotany and Phytomedicine	2017-2018	✓	✓	✓	
		BOT-406EE	Herbal Drugs and Cosmetics	2017-2018	✓	✓	✓	
		BOT-407EE	Hydroponics	2017-2018	✓	✓	✓	
		BOT-408EE	Nano Biotechnology	2017-2018	✓	✓	✓	
BOT-409EE	Plant Diseases and Management	2017-2018	✓	✓	✓			
Practical-I	Molecular Genetics, Genomics and Proteomics & Plant Biotechnology	2017-2018	✓	✓	✓			
	Molecular Plant Physiology /							

		Practical -II	Horticulture and Agriculture Biology / Ethnobotany & Phytomedicine	2017-2018	✓	✓	✓
31	Biotechnology	BTH-101	Structure and functions of Biomolecules	2017	✓		
BTH-102		Advanced tools and techniques	2017	✓			
BTH-103P		Practical related to Analytical methods	2017			✓	
BTH-104P		Practical related to Biochemical Preparations and Analysis	2017			✓	
BTH-105		Microbiology and Immunology	2017	✓	✓		
BTH-106		Human values and Professional ethics-I	2017				
BTH-201		Enzymes and Intermediary metabolism	2017	✓			
BTH-202		Molecular Biology	2017	✓			
BTH-203P		Practical related to Molecular Biology	2017			✓	
BTH-204P		Practical related to Enzymology	2017			✓	
BTH-205		Technical writing, Biostatistics and Bioinformatics	2017	✓			
BTH-206		Human values and Professional ethics-II	2017				
BTH-301		Genetic Engineering	2017	✓			
BTH-302		Cell and Tissue culture	2017	✓	✓		
BTH-303P		Practical related to Microbiology	2017			✓	
BTH-304P		Practical related to Tissue culture	2017			✓	
BTH-305a		Bioprocess Engineering and Technology	2017	✓			
BTH-305b		Legal, ethical and implications of Biotechnology	2017	✓			
BTH-305c		Food and Industrial Biotechnology	2017	✓	✓	✓	
BTH-306a		Plant tissue culture	2017	✓	✓	✓	
BTH-306b		Bioethics	2017	✓			
BTH-306c		Bioinformatics	2017	✓		✓	
BTH-401		Environmental Biotechnology	2017	✓	✓		
BTH-402		Plant Biotechnology	2017	✓	✓		
BTH-403P		Practical related to Immunology	2017		✓	✓	
BTH-404		Project work	2017	✓			
BTH-405a		Pharmaceutical Biotechnology	2017	✓			
BTH-405b		Animal Biotechnology	2017	✓			
BTH-405c		Applications of Biotechnology	2017	✓			
BTH-406a		Tools in Biotechnology	2017	✓			
BTH-406b	Immunology	2017	✓	✓			
BTH-406c	Applications of Biotechnology	2017	✓				
32	Chemistry	CHE 201	Inorganic Chemistry – II	2017	✓		
		CHE 202	Organic Chemistry – II	2017	✓		

		CHE 203	Physical Chemistry II	2017	✓		
		CHE IC 301	Inorganic Spectroscopy & Thermal Methods of Analysis	2017	✓		✓
		CHE OC 302	Organic Spectroscopy	2017	✓	✓	✓
		CHE PC 301	Physical Chemistry – III	2017	✓		✓
		CHE OC 301	Organic Chemistry III	2017	✓		✓
		CHE AC 401	Quality Control and General Principles	2017	✓		✓
		CHE AC 403	Instrumental Methods of Analysis II	2017	✓	✓	✓
		CHE OC 401	Organic Synthesis I	2017	✓		
		CHE OC 402	Organic Synthesis II	2017	✓		
		CHE OC 405A	Heterocyclics and natural products	2017	✓		
		CHE 405 B	Bioinorganic, Bioorganic, Biophysical	2017	✓		✓
		CHE EC 401	Energy, environment & Soil	2017	✓		
		CHE EC 402	Water pollution Monitoring & environment laws	2017	✓	✓	✓
		CHE OC 304	Multi Step Preparations	2017	✓	✓	✓
		CHE AC 403	Instrumental Methods of Analysis – II	2017	✓	✓	✓
		CHE OC 403	Spectral identification of organic compounds	2017	✓	✓	✓
		CHE PC 403	Potentiometry, Polarography	2017	✓	✓	✓
		CHE 404	Project Work	2017	✓	✓	✓
33	Environmental Sciences	ENV-101	Ecology and Environment	2017	✓	-	-
		ENV -102	Environmental Chemistry	2017	✓	-	-
		ENV -103	Practical-I	2017	✓	✓	✓
		ENV -104	Practical-II	2017	✓	✓	✓
		ENV -105	Environmental Toxicology and Public Health	2017	✓	-	-
		ENV -106	Human Values and Professional Ethics – I	2017	-	-	-
		ENV-201	Energy and Environment	2017	✓	-	✓
		ENV-202	Environmental Pollution	2017	✓	-	-
		ENV-203	Practical-I	2017	✓	✓	✓
		ENV-204	Practical-II	2017	✓	✓	✓
		ENV-205	Instrumental Techniques and applications	2017	✓	-	✓
		ENV-206	Human Values and Professional Ethics – II	2017	-	-	-
		ENV-301	Waste Treatment and Management	2017	✓	-	✓
		ENV-302	Environmental Impact Assessment, Audit and Economics	2017	✓	-	✓
		ENV-303	Practical-I	2017	✓	✓	✓
		ENV-304	Practical-II	2017	✓	✓	✓
		ENV-305 A	Disaster Mitigation and Management	2017	✓	-	✓
		ENV-305 B	Biodiversity conservation and Management	2017	✓	-	✓
		ENV-305 C	Statistics, Computer Applications and Modeling	2017	✓	-	✓
		ENV-306 A	Natural Resources Conservation	2017	✓	-	-
		ENV-306 B	Environmental Education	2017	✓	-	-

		ENV-401	Water Resources and Watershed Management	2017	✓	-	✓
		ENV-402	Remote Sensing and GIS	2017	✓	✓	✓
		ENV-403	Practical-I	2017	✓	✓	✓
		ENV-404	Project Work and Comprehensive Viva-Voce	2017	✓	✓	✓
		ENV-405 A	Eco Tourism and Eco- restoration	2017	✓	-	✓
		ENV-405B	Environmental Laws, Policies and Legislation	2017	✓	-	-
		ENV-405 C	Environmental Management and Sustainable Development	2017	✓	-	-
		ENV-406 A	Forest Resources and Management	2017	✓	-	-
		ENV-406 B	Global Environmental Issues	2017	✓	-	-
34	Fishery Sciences & Aquaculture	AQC 101	Concepts of Aquatic Ecology	2017 - 18			
		AQC 102	Systematics And External Anatomy of Cultivable Organisms	2017 - 18			
		AQC 103	Identification and Morphology of Cultivable Organisms	2017 - 18			
		AQC 104	Fish Nutrition	2017 - 18			
		AQC 105	Fish Nutrition and Water Quality Management	2017 - 18			
		AQC 106	Human Values and Professional Ethics – I	2017 - 18			
		AQC 201:	Principles of Aquaculture	2017 - 18			
		AQC 202 :	Physiology of Cultivable Organisms	2017 - 18			
		AQC 203	Soil and Water Characteristics	2017 - 18			
		AQC 204	Physiology of Fin Fish and Shell Fish	2017 - 18			
		AQC 205	Fresh Water Aquaculture	2017 - 18			
		AQC 206	Human Values and Professional Ethics - II	2017 - 18			
		AQC 301	Microbiology and Fish Pathology	2017 - 18			
		AQC 302	Fish Immunology	2017 - 18			
		AQC 303	Microbiology and Fish Diseases	2017 - 18			
		AQC 304	Cell Biology, Genetics and Immunology	2017 - 18			
		AQC 305	a) Cell Biology and Genetics	2017 - 18			
		AQC 306	b) Fishery Economics, Extension and Environmental Management	2017 - 18			
		AQC 307	c) Coastal Aquaculture	2017 - 18			
		AQC 308	a) Fish Processing Technology	2017 - 18			
		AQC 309	b) Pollution and Toxicology	2017 - 18			
		AQC 310	c) Environmental Monitoring and Biodeterioration	2017 - 18		√	
		AQC 401	Aquaculture Biotechnology	2017 - 18		√	
		AQC 402	Essentials of Biochemistry	2017 - 18			
		AQC 403	Biotechnology and Biostatistics	2017 - 18			
		AQC 404	Project Work	2017 - 18			
		AQC 405	a) Computer Applications, Information Technology and Biostatistics in Aquaculture	2017 - 18		√	

		AQC 406	b)Fish Breeding and Hatchery Management	2017 - 18			
		AQC 407	c) Limnology	2017 - 18			
		AQC 408	a) Bioinformatics in Aquaculture	2017 - 18		√	
		AQC 409	b)General Principles and Practices of Aquaculture	2017 - 18			
		AQC 410	c)Ornamental Fish Culture	2017 - 18			
35	Geography	GEG-101	Geomorphology	2017	√	√	√
		GEG-102	Economic Resource Studies	2017	√		√
		GEG-103P	Maps Scales and Map Projections	2017		√	√
		GEG-104P	Terrain Mapping Techniques	2017		√	√
		GEG-105	Advanced Cartography	2017		√	√
		GEG-106	Human Values and Professional Ethics-I	2017			√
		GEG-201	Climatology and Oceanography	2017	√	√	√
		GEG-202	Principles of Remote Sensing	2017	√		√
		GEG-203P	Interpretation of topographical and Weather Maps	2017	√	√	√
		GEG-204P	Techniques of Mapping and Map Analysis	2017		√	√
		GEG-205	Geographical Thought	2017	√		
		GEG-206	Human Values and Professional Ethics-II	2017			
		GEG-301	Urban Studies	2017		√	√
		GEG-302	Geographical Information System(G.I.S)	2017	√	√	
		GEG-303P	Geographical Information System(G.I.S)	2017	√	√	
		GEG-304P	Statistical Techniques	2017			
		GEG-305A	Agricultural Studies	2017	√		
		GEG-305B	Regional Geography of India with special reference to Andhra Pradesh	2017			
		GEG-305C	Disaster Management Studies	2017			
		GEG-306A	Regional Geography of Andhra Pradesh	2017			
		GEG-306B	Geographical information System(GIS)and Global Positioning System(GPS) applications	2017	√	√	√
		GEG-401	Regional Planning	2017			√
		GEG-402	Advanced Remote Sensing	2017			
		GEG-403P	Research Techniques	2017			
		GEG-404P	Remote Sensing Applications	2017	√		
		GEG-405A	Water and Soil Resource Management	2017			√
		GEG-405B	Environmental Studies	2017			
		GEG-405C	Geography for Research Extension and industry	2017			
		GEG-406A	Regional Geography of India	2017			
		GEG-406B	Remote sensing Principles and Applications	2017			√
36	Geology	GEO-101	Geomorphology	2017	√		
		GEO-102	Crystallography & Mineralogy	2017		√	√

		GEO-103P	Crystallography & Mineralogy	2017		√	√
		GEO-104P	Geomorphology & Paleontology	2017	√		
		GEO-105	Stratigraphy & Paleontology	2017	√		
		GEO-106	Human Values & Professional	2017			
			Ethics-I	2017			
		GEO-201	Structural Geology and Geotectonics	2017			√
		GEO-202	Remote Sensing and GIS	2017			√
		GEO-203P	Structural Geology & Sedimentology	2017		√	
		GEO-204P	Remote Sensing and GIS	2017			√
		GEO-205	Sedimentology	2017	√		
		GEO-206	Human Values & Professional	2017			
			Ethics-II	2017			
		GEO-301	Igneous Petrology	2017	√	√	√
		GEO-302	Metamorphic Petrology	2017	√	√	
		GEO-303P	Petrology	2017	√	√	
		GEO-304P	Geochemistry	2017	√		
		GEO-305	Geochemistry and Thermodynamics	2017			
		GEO-306	Computer Applications and Geostatistics	2017			
		GEO-307	Dimensional Stones and Building Materials	2017			√
		GEO-308	Gemmology	2017			√
		GEO-309	Surveying and Field Geology	2017		√	√
		GEO-401	Economic Geology	2017	√		√
		GEO-402	Mineral Exploration, Mining & Engineering Geology	2017	√		
		GEO-403P	Economic Geology	2017	√		
		GEO-404P	Project Work	2017	√		
		GEO-405	Hydrogeology	2017			√
		GEO-406	Environmental Geology & Natural Hazards	2017			
		GEO-407	Water Shed Management	2017	√		
		GEO-408	Medical Geology	2017	√		
		GEO-409	Fuel Geology	2017			
37	Home sciences	FSND-101	Food Chemistry and Analysis	2017	√		
		FSND -102	Food Science and Experimental Foods	2017			√
		FSND -103	Clinical Nutrition and Dietetics-I	2017	√	√	
		FSND -104	Food Chemistry and Analysis Practical	2017	√		√
		FSND -105	Food Science and Experimental Foods Practical	2017			√
		FSND -106	Clinical Nutrition and Dietetics-I Practical	2017	√	√	
		FSND -107	Essential of Food and Community Nutrition	2017	√		
		FSND -108	Human Values and Professional Ethics-I	2017			√
		FSND -201	Nutritional Bio chemistry	2017			√
		FSND -202	Food Microbiology and Safety	2017	√		

	FSND -203	Clinical Nutrition and Dietetics-II	2017	√	√	
	FSND -204	Nutritional Bio chemistry Practical	2017			√
	FSND -205	Food Microbiology and Safety Practical	2017	√		√
	FSND -206	Clinical Nutrition and Dietetics-II Practical	2017	√	√	
	FSND -207	Research Methodology	2017			√
	FSND -208	Human Values and Professional Ethics-II	2017			√
	FSND -301	Food Processing and Preservation Technology	2017			√
	FSND -302	Advanced Human Nutrition	2017			√
	FSND -303	Rural Work Experience	2017			√
	FSND -304	Internship	2017	√		
	FSND -305	(a) Nutrition Research Techniques	2017			√
		(b) Geriatric Nutrition				
		(c) Nutrition in Emergencies and Disaster				
	FSND -306	(a) Fundamentals of Food, Nutrition and Health	2017			√
		(b) Nutritional Assessment				
	FSND -401	Food Safety Standards and Quality Control	2017	√		
	FSND -402	Food Product Development and Marketing	2017	√		
	FSND -403	Nutrition for Health and Fitness/Dissertation	2017	√	√	
	FSND -404	Food Safety Standards and Product Development Practical	2017	√		√
	FSND -405	(a) Institutional Food Service Management	2017			√
		(b) Improving Health and Nutrition IEC Approaches				
		(c) Food Packaging				
	FSND -406	(a) Child Welfare Programmes	2017			√
		(b) Disaster Management				
Human Development and Child Welfare	HDCW-101	Advanced Study of Child Development	2017			√
	HDCW-102	Community Nutrition	2017			√
	HDCW-103	Trends in Early Childhood Education	2017	√		√
	HDCW-104	Developmental Assessment Practical	2017			√
	HDCW-105	Community Nutrition Practical	2017			√
	HDCW-106	Early Childhood Education Practical	2017	√		√
	HDCW-107	Family Dynamics	2017			
	HDCW-108	Human Values and Professional Ethics - I	2017			
	HDCW-201	Quality Standards in ECE Centers	2017	√	√	
	HDCW-202	Child Study Techniques	2017			√
	HDCW-203	Children with Developmental Challenges	2017	√		√
	HDCW-204	Participation in ECE Center Practical	2017			√
	HDCW-205	Child Study Techniques Practical	2017			√

	HDCW-206	Children with Developmental Challenges Practical	2017	✓		✓
	HDCW-207	Research Methodology	2017			
	HDCW-208	Human values and Professional Ethics-II	2017			
	HDCW-301	Parent Education	2017			✓
	HDCW-302	Theories and Approaches to Child Guidance	2017	✓		✓
	HDCW-303	Rural Work Experience	2017			✓
	HDCW-304	Internship	2017	✓		
	HDCW-305 (A)	Infant Development and Stimulation	2017			✓
	HDCW-305 (B)	Family Life Education	2017		✓	
	HDCW-305 (C)	Planning For Project Management	2017			
	HDCW-306 (A)	Fundamentals of Food, Nutrition and Health	2017			
	HDCW-306 (B)	Nutritional Assessment	2017			✓
	HDCW-401	Guidance and Counseling in Human Development	2017	✓		✓
	HDCW-402	Advanced Human Development	2017			✓
	HDCW-403	Thesis/Rehabilitation and Management of Children with Special Needs	2017			✓
	HDCW-404	Guidance and Counseling Practical	2017	✓		✓
	HDCW-405 (A)	Child and Human Rights	2017	✓		
	HDCW-405 (B)	Care for Elderly	2017	✓		
	HDCW-406 (A)	Child Welfare Programmes	2017	✓		
	HDCW-406 (B)	Disaster management	2017			
Extension Management and Communication Technology	EMCT-101	Extension Education in Community Development	2017	√		
	EMCT-102	Community Nutrition	2017			√
	EMCT-103	Communication and Media Preparation	2017	√		
	EMCT-104	Extension Education in Community Development Practical	2017	√		√
	EMCT-105	Community Nutrition Practical	2017			√
	EMCT-106	Communication and Media Preparation Practical	2017	√		√
	EMCT-107	Dynamics of Rural Society	2017	√		
	EMCT-108	Human Values and Professional Ethics-1	2017			√
	EMCT-201	Entrepreneurial Development and Empowerment of Women	2017	√	√	√

EMCT-202	Educational Technology	2017	√		√
EMCT-203	Community organization and Leadership	2017	√		√
EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2017	√	√	√
EMCT-205	Educational Technology Practical	2017	√		√
EMCT-206	Community Organization and Leadership Practical	2017	√		√
EMCT-207	Research Methodology	2017	√		√
EMCT-208	Human values and Professional Ethics-II	2017			√
EMCT-301	Rural Development Administration	2017	√		√
EMCT-302	Training and Development	2017	√		√
EMCT-303	Rural Work Experience	2017			√
EMCT-304	Internship	2017	√		√
EMCT-305	(a) Managerial Skills for Extension Professionals	2017	√		√
	(b) Communication Technologies in Extension				
	(c) Sustainable Livelihood Systems				
EMCT-306	(a) Fundamentals of Food. Nutrition and Health	2017	√	√	√
	(or)				
	(b) Nutritional Assessment				
EMCT-401	Principles of Guidance and Counseling	2017	√		√
EMCT-402	Extension Programme Planning and Evaluation	2017	√	√	√
EMCT-403	Thesis/ Community Health Management	2017	√		
EMCT-404	Principles of Guidance and Programme Planning Practical	2017	√		
EMCT-405	(a) Extension Management	2017	√		√
	(b) Science & Technology for Rural Women				
	(c) Environmental Management				
EMCT-406	(a) Child Welfare Programmes	2017	√		
	or (b) Disaster Management				
Food Technology					
FT-101	Food Chemistry and Analysis	2017	√		
FT-102	Food Science and Experimental Foods	2017	√		
FT-103	Cereal Grains, Legumes and Oilseed Technology	2017	√		
Practical-I	Food Chemistry and Analysis	2017	√		√
Practical-II	Food Science and Experimental Foods	2017	√		√
Practical-III	Cereal Grains, Legumes and Oilseed Technology	2017	√	√	
FT-104	Essentials of Food and Community Nutrition	2017			

		FT-105	Human Values and Professional Ethics - I	2017			√
		FT-201	Technology of Horticulture produce	2017	√		
		FT-202	Food Microbiology and Safety	2017	√		√
		FT-203	Dairy Technology	2017	√		
		Practical-I	Technology of Horticulture produce	2017	√	√	√
		Practical-II	Food Microbiology and Safety	2017	√		√
		Practical-III	Dairy Technology	2017	√	√	√
		FT-204	Research Methodology	2017			√
		FT-205	Human Values and Professional Ethics – II	2017			√
		FT-301	Food processing and Preservation Technology	2017	√		√
		FT-302	Live Stock and Sea Food technology	2017	√		√
		Practical-I	Food Processing and Preservation Technology	2017	√	√	√
		Practical-II	In plant training.	2017	√	√	√
		FT-303(a)	a)Unit operations in Food Industry.	2017	√		√
		FT -303(b)	b) Spices, Condiments and Plantation Crops	2017	√		
		FT -303(c)	c) Nutrition in Emergencies and Disaster	2017			
		FT -304(a)	(a)Fundamentals of Food, Nutrition and Health	2017	√		
		FT -304(b)	b)Nutritional Assessment	2017			√
		FT-401	Food Safety Standards and Quality Control	2017	√		√
		FT-402	Food Product Development and Marketing	2017	√		√
		FT-403	Nutrition for Health and Fitness/Project Work	2017	√	√	
		Practical-I	Food Safety standards and Product Development	2017	√	√	√
		FT-404(a)	(a) Institutional food service management	2017	√	√	
		FT-404(b)	(b)Basic Food Engineering	2017	√		√
		FT-404(c)	(c)Food Packaging	2017	√	√	
		FT- 405(a)	(a) Child Welfare Programmes	2017			
		FT- 405(b)	(b)Disaster Management	2017			
38	Mathematics	MA 101	Algebra	2017			√
		MA 102	Real analysis	2017			√
		MA 103	Ordinary Differential equations	2017			√
		MA 104	Complex analysis	2017			√
		MA 105	Computer Oriented Numerical Methods	2017	√		√

	MA 106	Human Values & Professional Ethics-I	2017	✓	✓	✓	
	MA 201	Galois Theory	2017			✓	
	MA 202	Partial Differential Equations	2017			✓	
	MA 203	Topology	2017			✓	
	MA 204	a) Advanced Complex analysis	2017			✓	
		b) Semi group theory					
		c) Non linear Analysis					
	MA 205	Human Values & Professional Ethics-II	2017	✓	✓	✓	
	MA 206	Measure and Integration	2017			✓	
	MA 301	Commutative Algebra	2017			✓	
	MA 302	Functional Analysis	2017			✓	
	MA 303	Classical Mechanics	2017	✓		✓	
	MA 304	a) Differential Geometry	2017	✓	✓	✓	
		b) Cryptography					
		c) Linear Algebra					
	MA 305	a) Discrete Mathematics	2017	✓	✓	✓	
		b) Business Mathematics					
		c) Basic Mathematics for Social Sciences					
	MA 401	Number Theory	2017			✓	
	MA 402	Banach Algebra	2017			✓	
	MA 403	Graph Theory	2017	✓	✓	✓	
	MA 404	a) Mathematical Statistics	2017	✓	✓	✓	
		b) Approximation Theory					
		c) Algebraic coding Theory					
	MA 405	a) Operation Research	2017	✓	✓	✓	
		b) Theoretical Computer Science					
		c) Biomechanics					
Applied Mathematics	AM 101	Methods of Applied Mathematics	2017			✓	
	AM 102	Real analysis	2017			✓	
	AM 103	Ordinary Differential equations	2017			✓	
	AM 104	Complex analysis	2017			✓	
	AM 105	Human Values & Professional Ethics-I	2017	✓	✓	✓	
	AM 106	Computer Oriented Numerical Methods	2017	✓		✓	
	AM 201	Mathematical Modeling	2017			✓	
	AM 202	Partial Differential Equations	2017			✓	
	AM 203	Topology	2017			✓	
	AM 204	d) Advanced Complex analysis	2017				✓
		e) Semi group theory					

		f) Non linear Analysis				
		AM 205 Human Values & Professional Ethics-II	2017	✓	✓	✓
		AM 206 Measure and Integration	2017			✓
		AM 301 Continuum Mechanics	2017	✓		✓
		AM 302 Functional Analysis	2017			✓
		AM 303 Classical Mechanics	2017	✓		✓
		AM 304 d) Differential Geometry	2017	✓	✓	✓
		e) Cryptography				
		f) Linear Algebra				
		AM 305 a) Discrete Mathematics	2017	✓	✓	✓
		b) Business Mathematics				
		c) Basic Mathematics for Social Sciences				
		AM 401 Number Theory	2017			✓
		AM 402 Fluid Dynamics	2017	✓		✓
		AM 403 Graph Theory	2017	✓		✓
		AM 404 d) Mathematical Statistics	2017	✓	✓	✓
		e) Approximation Theory				
		f) Algebraic coding Theory				
		AM 405 a) Operation Research	2017	✓	✓	✓
		b) Theoretical Computer Science				
		c) Biomechanics				
39	Microbiology	MB-101 Biological Chemistry & Analytical Techniques	2017	√	√	√
		MB-102 Enzymology & Microbial Physiology & Metabolism	2017	√	√	√
		MB-103P Practical – I. Biological Chemistry & Analytical Techniques	2017	√	√	√
		MB-104P Practical – II Enzymology & Microbial Physiology & Metabolism	2017			√
		MB-105 Introductory Microbiology	2017			√
		MB-106 Human Values and Professional Ethics – I	2017	√		√
		MB-201 Immunology	2017	√	√	√
		MB-202 Medical Microbiology	2017	√	√	√
		MB-203P Practical – I Immunology	2017	√	√	√
		MB-204P Practical – II Medical Microbiology	2017	√	√	√
		MB-205 Basics of Virology	2017			√
		MB-206 Human Values and Professional Ethics –II	2017	√		√
		MB-301 Microbial Genetics and Molecular Biology	2017	√	√	√
		MB-302 Recombinant DNA Technology & Bioinformatics	2017	√	√	√
		MB-303 Microbial Genetics and Molecular Biology & Recombinant DNA Technology & Bioinformatics	2017	√	√	√
		MB-304 a) Agricultural Microbiology	2017	√	√	√
		b) Food Microbiology				
		MB-305 a) Agricultural Microbiology	2017	√	√	√

		IMB-305	b) Food Microbiology	2017	√	√	√	
		MB-306	a) Applied Microbiology	2017	√	√	√	
			b) Industrial Food Microbiology					
		MB-401	Molecular Cell Biology & Technology	2017	√		√	
		MB-402	Environmental Microbiology	2017	√	√	√	
		MB-403	Molecular Cell Biology & Technology &	2017	√		√	
			Environmental Microbiology					
		MB-404	Project	2017			√	
		MB-405	a) Agricultural Biotechnology	2017	√	√	√	
			b) Bioprocess Engineering					
		MB-406	a) Fermentation Technology	2017	√	√	√	
			b) Pharmaceutical Microbiology					
	M.Sc. Industrial Microbiology	IMB-101	Biological Chemistry & Analytical Techniques	2017	√	√	√	
			IMB-102	Enzymology & Microbial Physiology & Metabolism	2017	√	√	√
			IMB-103P	Practical – I .Biological Chemistry & Analytical Techniques	2017	√	√	√
			IMB-104P	Practical – II Enzymology & Microbial Physiology & Metabolism	2017			√
			IMB-105	Introductory Microbiology	2017			√
			IMB-106	Human Values and Professional Ethics – I	2017	√		√
			IMB-201	Immunology	2017	√	√	√
			IMB-202	Medical Microbiology	2017	√	√	√
			IMB-203P	Practical – I Immunology	2017	√	√	√
			IMB-204P	Practical – II Medical Microbiology	2017	√	√	√
			IMB-205	Basics of Virology	2017			√
			IMB-206	Human Values and Professional Ethics –II	2017	√		√
			IMB-301	Fundamentals of Industrial Microbiology	2017	√	√	√
			IMB-302	Food Microbiology and Fermentation Technology	2017	√	√	√
			IMB-303	Fundamentals of Industrial Microbiology	2017			√
			IMB-304	Food Microbiology and Fermentation Technology	2017	√	√	√
			IMB-305	a) Bioprocessing of Industrial Microorganisms and their Products	2017	√		√
				b) Bioprocess Engineering and Technology				
			IMB-306	a) Industrial Biotechnology	2017	√	√	√
				b) Immuno Technology and Human Health				
			IMB-401	Downstream Processing Technology	2017	√		√
			IMB-402	Cell and Pharmaceutical technology	2017	√	√	√
			IMB-403	Downstream Processing Technology & Cell and Pharmaceutical technology	2017	√		√
			IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2017			√
			IMB-405	a) Biostatistics & Bioinformatics	2017			√
				b) Biosafety, Bioethics and Intellectual property rights				
			IMB-406	a) Microbes in Human Welfare	2017	√	√	√
				b) Medical and Diagnostic Microbiology				
40		Physics	PHY 101	Classical Mechanics and Statistical Mechanics	2017		√	√

		PHY 102	Analog and Digital Electronics	2017	✓		
		PHY 103	General Physics lab 1	2017			✓
		PHY 104	Electronics lab 1	2017			✓
		PHY 105	Electro magnetic theory, Atomic and Molecular Physics	2017			
		PHY 106	Human values & Professional Ethics-I	2017	✓		
		PHY 201	Lasers and Modern optics	2017	✓		
		PHY 202	Mathematical Physics	2017			
		PHY 203	General Physics lab 2	2017			✓
		PHY 204	Electronics lab 2	2017			✓
		PHY 205	Solid State Physics	2017			
		PHY 206	Human values & Professional Ethics-II	2017			
		PHY 301	Quantum Mechanics – I	2017			
		PHY 302	Physics of semiconductor devices	2017	✓		
		PHY 303	Computer lab	2017			✓
		PHY 304	Elective lab 1	2017			✓
		PHY 305	Elective	2017			
			A) Applied Spectroscopy-I	2017			
			B) Condensed Matter Physics-I	2017			✓
			C) Electronics-embedded systems	2017			✓
			D) Photonics-I	2017			✓
			E) Solar energy-thermal physics	2017			✓
			F) Vacuum and thin film technology	2017			✓
		PHY 306	A) Computational methods and Programming	2017			✓
			B) Energy Harvesting Systems	2017			✓
		PHY 401	Quantum Mechanics - II	2017			
		PHY 402	Advances in Physics	2017			
		PHY 403	Elective lab 2	2017			✓
		PHY 404	Project work	2017			✓
		PHY 405	Elective	2017			
			A) Applied Spectroscopy-II	2017			✓
			B) Condensed Matter Physics-II	2017			
			C) Electronics-Wireless communications	2017			✓
			D) Photonics-II	2017			
			E) Solar energy-Photovoltaic aspects	2017	✓	✓	✓
			F) Properties and applications of thinfilms	2017	✓	✓	✓
		PHY 406	A) Analytical techniques and Nuclear Physics	2017			
			B) Nanomaterials and devices	2017			✓
41	Psychology	PSY 103b	Psychological Measurement-I(CF)	2017	✓		
		PSY 103c	Positive Psychology (CF)	2017	✓		
		PSY 104a	Child Development Psychology	2017	✓		✓
		PSY 104b	Psychological Measurement & Statistics	2017	✓		

	PSY 104c	Forensic Psychology	2017	√		√
	PSY 105	Practicals related to General Psychology –II& Psychopathology-II	2017			√
	PSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2017			
	PSY 203a	Psychopathology-II (CF)	2017	√		
	PSY 203b	Psycho-Diagnosis (CF)	2017	√		√
	PSY 203c	Computer Application in Psychological Research-(CF)	2017	√		√
	PSY 204b	Consumer Behavior	2017	√		
	PSY 204c	Industrial & Organizational Psychology	2017	√		
	PSY 205	Practicals related to General Psychology –II& Psychopathology-II	2017			√
	PSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2017			√
	PSY 301	Counseling Psychology (CC)	2017	√		√
	PSY 302	Psychology of Personality (CC)	2017	√		
	PSY 303a	Organizational Behavior & HRM (GE)	2017	√		
	PSY 303b	Therapeutic Approaches in Counseling-I	2017	√		√
	PSY 303c	Health Psychology(GE)	2017	√		
	PSY 304	Core & Generic Elective	2017	√		√
	PSY 305	Stress Management Theory & Practical	2017	√		√
	PSY 306	Personality Development (OE)	2017	√		
	PSY 401	Therapeutic Approaches in Counseling-II(CC)		√		√
	PSY 401c	c. Rehabilitation Psychology (GE)		√		√
	PSY 404	Core & Generic Elective		√		√
	PSY 406	Life Skills (OE)		√		√
	Counselling psychology					
	CPSY 103a	Psychopathology-I (CF)	2017	√		
	CPSY 103b	Psychological Measurement-I(CF)	2017	√		
	CPSY 103c	Positive Psychology (CF)	2017	√		
	CPSY 104a	Child Development Psychology	2017	√		√
	CPSY 104b	Psychological Measurement & Statistics	2017	√		
	CPSY 104c	Forensic Psychology	2017	√		√
	CPSY 105	Practicals related to General Psychology –II& Psychopathology-II	2017			√
	CPSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2017			
	CPSY 203a	Psychopathology-II (CF)	2017	√		
	CPSY 203b	Psycho-Diagnosis (CF)	2017	√		√
	CPSY 203c	Computer Application in Psychological Research-(CF)	2017	√		√
	CPSY 204b	Consumer Behavior	2017	√		

		CPSY 204c	Industrial & Organizational Psychology	2017	√		
		CPSY 205	Practicals related to General Psychology –II& Psychopathology-II	2017			√
		CPSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2017			√
		CPSY 301	Counselling Process	2017	√		√
		CPSY 302	Counselling Skills	2017	√		
		CPSY 303a	Therapeutic Approaches in Counseling-I	2017	√		
		CPSY 303b	Counseling in Organizational Settings	2017	√		√
		CPSY 303c	Health Psychology	2017	√		
		CPSY 304	Practicals related to counseling skills & Counseling in Organizational Settings	2017	√		√
		CPSY 305	Stress Management & Counseling Psychology	2017	√		√
		CPSY 306	Personality Development	2017	√		
		CPSY 401	Applications of Counselling in Special Areas	2017	√		√
		CPSY 402	Therapeutic Approaches in Counselling-II	2017	√		√
		CPSY 403a	Counseling in Hospital Settings	2017	√		√
		CPSY 403b	Counseling in Community Settings	2017	√		√
			Family Counseling				
		CPSY 403c	Family Counseling	2017	√		√
		CPSY 404	Practicals related to counseling techniques & applications in different areas	2017	√		√
		CPSY 405	Allotment of Project work (Theory and Practice)	2017			
		CPSY 406	Life Skills (OE)	2017			
42	Statistics	ST - 305 (a)	Bio-Statistics	2017-18	√	-	-
		ST - 305 (c)	Total Quality Management and Six - Sigma	2017-18	-	√	-
		ST - 405 (b)	Statistics for Research, industry and Community Development	2017-18	-	√	-
		ST - 405 (c)	Advanced Econometric Models	2017-18	√	-	-
		ST - 406 (b)	Survival Analysis	2017-18	√	-	-
		APST – 305 (a)	Advanced Bio-Statistics	2017-18	√	-	-
	Applied statistics	APST – 305 (c)	Data Mining and Information Security	2017-18	-	-	√
		APST – 305 (a)	Statistics for Research, industry and Community Development	2017-18	-	√	-
		APST – 305 (c)	Actuarial Statistics	2017-18	-	-	√
43	Virology	VR-101	General Microbiology	2017	√	-	-
		VR-102	General Virology	2017			
		VR-103(P)	General Microbiology and Virology	2017	√	√	√

		VR-104(P)	Biological Chemistry and Analytical Techniques	2017	✓	✓	✓
		VR-105	Biological Chemistry and Analytical Techniques	2017	✓	-	-
		VR-106	Human values and Professional ethics - I	2017	-	-	-
		VR-201	Microbial Genetics and Molecular Biology	2017	✓	-	-
		VR-202	Recombinant DNA Technology	2017	✓	✓	✓
		VR-203(P)	Microbial Genetics and Molecular Biology & Recombinant DNA Technology	2017	✓	✓	✓
		VR-204(P)	Cell biology and Immunology	2017	✓	✓	✓
		VR-205	Cell biology and Immunology	2017	✓	✓	✓
		VR-206	Human values and Professional ethics -II	2017	-	-	-
		VR-301	Plant Virology	2017	✓	-	-
		VR-302	Plant Viruses and Diseases	2017	✓	-	✓
		VR-303(P)	Plant Virology and Plant Viruses and Diseases	2017	✓	-	✓
		VR-304(P)	a) Molecular Virology (OR) b) Biostatistics and Bio-informatics	2017	✓	✓	✓
		VR-305	(a) Molecular Virology (OR) (b) Biostatistics and Bio-informatics	2017	✓	-	-
		VR-306	(a) Biology of Viruses and their management (OR) (b) Biology of Virus Vectors and their management	2017	-	✓	-
		VR-401	Animal and Human Virology	2017	✓	-	-
		VR-402	Animal and Human Virus Diseases	2017	✓	-	✓
		VR-403	Animal and Human Virology & Virus Diseases	2017	✓	✓	✓
		VR-404-A(P)(OR)	Applied Virology/Tumor Biology and Viruses (OR)	2017	✓	✓	✓
		VR-4:04-B(P)	Project work related to Virology				
		VR-405	(a) Applied Virology (OR) (b)Tumor Biology and Viruses	2017	✓	✓	✓
		VR-406	(a) Clinical Virology (OR) (b) Emerging Infectious Viral Diseases	2017	✓	✓	✓
44	Zoology	ZOO-101	Invertebrata & Chordata	2017	---	---	---
		ZOO-102	Genetics & Evolution	2017	✓		✓
		ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2017			✓
		ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2017	✓	✓	✓
		ZOO-105	Metabolic Regulation & Cell Function	2017	✓		✓
		ZOO-106	Human Values and Professional Ethics-I	2017			✓
		ZOO-201	Cell Biology & Immunology	2017	✓		✓
		ZOO-202	Molecular Biology	2017	✓	✓	✓
		ZOO-203P	Practical-I Molecular Biology and Cell Biology	2017	✓	✓	✓
		ZOO-204P	Practical-II	2017	✓		

ZOO-204F	Comparative Animal Physiology and Immunology	2017	✓		✓
ZOO-205	Comparative Animal Physiology	2017	✓		✓
ZOO-206	Human Values and Professional Ethics-II	2017			✓
ZOO-301	Developmental Biology	2017	✓		✓
ZOO-302	Environmental Biology	2017	✓		✓
ZOO-303P	Developmental Biology and Tools & Techniques	2017	✓	✓	✓
ZOO-304P	Environmental Biology and Enzymology	2017	✓		✓
ZOO-305A	Tools & Techniques	2017	✓	✓	✓
ZOO-305B	Enzymology	2017	✓		✓
ZOO-305C	Bioinformatics & Biostatistics	2017	✓		✓
ZOO-306A	Economic Zoology	2017	✓	✓	✓
ZOO-306B	Environmental Impact Assessment & Green Auditing	2017	✓		✓
ZOO-306C	Biodiversity and conservation	2017	✓	✓	✓
ZOO-401	Neurobiology	2017	✓		✓
ZOO-402	Toxicology	2017	✓		✓
ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2017	✓	✓	✓
ZOO-404P	Toxicology and Animal Behavior & Wild life	2017	✓		✓
ZOO-405A	Animal Biotechnology & Microbiology	2017	✓		✓
ZOO-405B	Animal Behavior & Wild life	2017	✓		✓
ZOO-405C	Endocrinology	2017	✓		✓
ZOO-406A	Genetic Engineering	2017	✓	✓	✓
ZOO-406B	Structural Biology	2017	✓		✓
ZOO-406C	Human Health and Infectious diseases	2017	✓	✓	✓
Animal Biotechnology					
ABT- Core- 101	Metabolic Regulation & Cell Function (MRCF)	2017	✓	-	-
ABT- Core- 102	Tools & Techniques (TT)	2017	-	-	✓
ABT-Core-P-103	MRCF	2017	✓	-	✓
ABT-Core-P-104	TT	2017	✓	-	✓
ABT-CF-105	Microbiology and Diseases	2017	✓	-	✓
ABT -EF- 106	Human Values & Professional Ethics (HVPE)-I	2017	-	-	✓
ABT- Core- 201	Molecular Biology (MB)	2017	✓	-	✓
ABT- Core- 202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2017	✓	-	✓
ABT-Core-P-203	MB & IM	2017	✓	-	✓
ABT-Core-P-204	ACC-SCB & CB	2017	✓	-	✓
ABT- CF-205	Cell Biology & Immunology (CB&IM)	2017	✓	-	-
ABT- EF- 206	Human Values & Professional Ethics (HVPE)-II	2017	-	-	✓
ABT- Core- 301	Enzymology (ENZ)	2017	✓	-	✓
ABT- Core- 302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2017	✓	✓	✓
ABT-Core-P-303	ENZ & GE	2017	✓	-	✓

		ABT-Core-P-304	ARBTT & EBT	2017	✓	-	✓
		GE-305A	Genetic Engineering (GE)	2017	✓	-	✓
		GE-305B	Environmental Biotechnology (EBT)	2017	✓	-	✓
		GE-305C	Biostatistics & Bioinformatics	2017	✓	-	✓
		OE-306A	Animal Biotechnology & Industrial Applications	2017	✓	-	✓
		OE-306B	Cancer Biology	2017	✓	-	✓
		ABT- Core- 401	Medical Biotechnology (MBT)	2017	✓	-	✓
		ABT- Core- 402	Fermentation Technology and Down streaming Process (FTDSP)	2017	✓	-	✓
		ABT-Core-P-403& 404	Project and Viva- Voce	2017	✓	✓	✓
		GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2017	✓	-	✓
		GE-405B	Drug design and Development	2017	✓	-	✓
		GE-405C	Animal Cell Culture Techniques	2017	✓	-	✓
		OE-406A	Advanced Genomics and Proteomics	2017	✓	-	✓
		OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2017	✓	-	✓
45	Business Management						
	MBA	MBA-101	Management and Organizational Behaviour	2017			✓
		MBA-102	Managerial Communication	2017	✓	✓	✓
		MBA-104	Accounting for managers	2017	✓		
		MBA-108	Human Values and Professional Ethics-I	2017	✓	✓	✓
		MBA-201	Marketing Management	2017			✓
		MBA-204	Production Management	2017			✓
		MBA-208	Leadership values and Styles	2017		✓	✓
		MBA-302	Entrepreneurship	2017		✓	
		MBA-303	Industrial Project Course	2017	✓	✓	
		MBA-401	Digital Business Models	2017	✓		
		MBA-402	Strategic Management	2017			✓
		MBA-404	Organisation Development	2017			✓
46	Computer Science	MCA 101	Discrete Mathematical Structures	2017	✓		
	MCA	MCA 102	Introduction to Internet Technologies	2017	✓		
		MCA 103	Object Oriented Programming with JAVA	2017	✓		
		MCA 104	Computer Organization	2017	✓		

MCA 105	105A Business and Management	2017	✓	✓	
	105B Essentials of Management	2017	✓	✓	
MCA 106	Human values and Professional Ethics	2017		✓	
MCA 107P	Software Lab based in 101 & 103	2017	✓		✓
MCA 108P	Internet technologies Lab	2017	✓		✓
MCA 109P	PC Hardware & Office Automation Lab	2017	✓		✓
MCA 201 A	Probability and Statistics for Computer Applications	2017	✓		
MCA 201 B	Statistical Methods for Computer Applications	2017	✓		
MCA 202	Data Structures using JAVA	2017	✓		
MCA 203	Operating Systems	2017	✓		
MCA 204	Advanced Database Management Systems	2017	✓		
MCA 205	Data Science Essentials	2017	✓		
MCA 206	Leadership values	2017	✓	✓	
MCA 207P	Software Lab (based on 201 & 203)	2017	✓		✓
MCA 208P	Data Structures Lab	2017	✓		✓
MCA 209P	Advanced Database Management Systems Lab	2017	✓		✓
MCA 210S	Group Desiccations	2017			
MCA 301	Computer Oriented Operations Research	2017		✓	
MCA 302	Data Communications and Computer Networks	2017	✓		
MCA 303	Software Engineering	2017	✓	✓	
MCA 304	Computer Graphics	2017	✓		
MCA 305	305A Technical Communication and Computer Ethics	2017	✓		
	305B Soft Skills	2017			✓
MCA 306P	Software lab (based on 301, 302 & 305)	2017	✓		✓
MCA 307P	Software Engineering Lab	2017	✓		✓
MCA 308P	Computer Graphics Lab	2017	✓		✓
MCA 309S	Seminar & Group Desiccations	2017			✓
MCA 401	Data Warehousing and Data Mining	2017	✓		
MCA 402	System Programming	2017	✓		
	403A Web Programming	2017	✓		
MCA 403	403B Artificial Intelligence	2017	✓		
	403C Software Testing	2017	✓		
	404A E-Commerce	2017	✓	✓	
MCA 404	404B Cyber Security	2017	✓		
	404C Neural Networks	2017	✓		

	MCA 405 A	Accounting and Financial Management	2017	✓		
	MCA 405 B	Accounting Essentials for Computer Applications	2017	✓		
	MCA 406	Human Rights & Value Education	2017		✓	
	MCA 407P	Data Mining Lab	2017	✓		✓
	MCA 408P	System Programming Lab	2017	✓		✓
	MCA 409P	Minor Project (by taking case studies from the Generic Elective courses)	2017	✓		✓
	MCA 410S	Technical Seminar	2017			✓
	MCA 501	Big data and Business Analytics	2017	✓		
	MCA 502	Cloud Computing	2017	✓		
		Elective III				
		503A User Interface Design				
	MCA 503	503B Cryptography and Network Security	2017	✓		
		503C Mobile App Development				
		503D IT in Forensic Science				
		Elective IV 504A Image Processing 504B Multimedia System				
		504C Natural Language Processing	2017	✓		
	MCA 504					
	MCA 507P	Software Lab (Case studies from 501)	2017	✓		✓
	MCA 508P	Software Lab (Case studies from 502)	2017	✓		✓
	MCA 509P	Minor Project Work	2017	✓		✓
	MCA 509S	Seminar	2017			✓
	MCA 601	Major Project Work	2017	✓		✓
	MSC (Computer Science)					
	MSCS -101C	Computer Organization	2017	✓		
	MSCS -102C	Programming in Java & Data Structures	2017	✓		
	MSCS -103C	Operating Systems	2017	✓		
	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2017	✓		
	MSCS – 104 GE - B	Computer Oriented Operational Research	2017	✓		
	MSCS - 05CF	Environmental Studies	2017		✓	
	MSCS - 106EF	A. PC Hardware Basics	2017		✓	
	MSCS - 106EF	B. Statistical Methods	2017		✓	
	MSCS - 107P1		2017	✓		✓
	MSCS - 108P2		2017	✓		✓

		MSCS -201C	Advanced Data Base Management System	2017	✓		
		MSCS -202C	Computer Networks	2017	✓		
		MSCS -203C	Computer Graphics	2017	✓		
		MSCS- 204 GE – A	E- Commerce	2017	✓	✓	
		MSCS- 204 GE B	Accounting And Financial Management	2017	✓		
		MSCS- 205CF	Human Rights And Value Education	2017	✓		
		MSCS- 206 EF A	Principles Of Management	2017	✓	✓	
		MSCS- 206 EF B	Internet Of Things	2017	✓		
		MSCS- 207P1		2017	✓		✓
		MSCS- 208P2		2017	✓		✓
		MSCS-301C	Data Warehousing And Data Mining	2017	✓		
		MSCS-302C	Web Technologies	2017	✓		
		MSCS-303C	Software Engineering	2017	✓	✓	
		MSCS -304- GE-A	Systems Programming	2017	✓		
		MSCS -304- GE-B	Computer Algorithms	2017	✓		
		MSCS -304- GE-C	UID Using .Net Technologies	2017	✓		
		MSCS -304- GE-D	IT in Forensic Science	2017	✓		
		MSCS -304- GE-E	Software Testing	2017	✓		
		MSCS -305 GE-A	Cloud Computing	2017	✓		
		MSCS -305 GE-B	Big Data Analytics	2017	✓		
		MSCS -305 GE-C	Artificial Neural Networks	2017	✓		
		MSCS -305 GE-D	Cyber Security	2017	✓		
		MSCS -305 GE-E	Mobile App Development	2017	✓		
		MSCS - 306OE	The courses offered by other departments	2017	✓		
			1. Programming in C				
			2. Office Automation				
			3. Internet Fundamentals and Web Designing				
		MSCS - 307P1		2017	✓		✓
		MSCS - 308P2		2017	✓		✓
		MSCS – 401	Major Project Work	2017	✓		✓
47	Commerce						
	M.Com (Regular)	101	Accounting Standards & Reporting	2017	✓		
		102	Financial Management	2017	✓		✓
		103	Business Environment and Policy	2017		✓	✓
		104	Organisational Behaviour	2017	✓		✓
		105	Quantitative Techniques for Business	2017			✓

	105a	Decisions				√
	106	Human Values & Professional Ethics - II	2017		√	√
	201	Advanced cost Accounting	2017	√		
	202	Financial Markets and Services	2017	√		√
	203	Strategic Financial Management	2017	√		√
	204	Corporate Governance	2017	√	√	
	205a	Working Capital Management	2017	√	√	
	206a	e-Banking Operations	2017			√
	301	Security Analysis and Portfolio Management	2017	√		√
	302	Accounting for Managerial Decisions	2017	√		√
	303a.	Tally with GST Application	2017	√		√
	304c.	Entrepreneurship & MSMEs	2017	√		√
	304a	Security Ananalysis & Portfolio Management	2017			
				√		√
	305a	Fundamentals of Accounting	2017			√
	401	Financial Derivatives	2017			√
	402	Tax Planning & Managemnt	2017	√		√
	403a.	E-Commerce	2017	√		√
	404b.	Personality Development & Soft Skills	2017	√		√
	405a	Security Market Operations	2017	√		√
M.Com Accounting & Finance	101	Accounting Standards & Reporting	2017	√		
	102	Financial Management	2017	√		√
	103	Business Environment and Policy	2017		√	√
	104	Organisational Behaviour	2017	√		√
	105a	Quantitative Techniques for Business Decisions	2017			√
	106	Human Values & Professional Ethics - I	2017		√	√
	201	Advanced cost Accounting	2017	√		
	202	Financial Markets and Services	2017	√		√
	203	Strategic Financial Management	2017	√		√
	204	Corporate Governance	2017	√	√	
	205a	Working Capital Management	2017	√	√	
	206a	e-Banking Operations	2017			√
	301	Security Analysis and Portfolio Management	2017	√		√
	302	Accounting for Managerial Decisions	2017	√		√
	303a.	Tally with GST Application	2017	√		√
	303c.	Tax planning & Management	2017	√		√
	304a	Accounting for Managerial Decisions	2017	√		√
	305a	Fundamentals of Accounting	2017			√

		401	Financial Derivatives	2017			√
		402	Project Planning & Control	2017	√		√
		403a.	Insurance Management	2017	√		√
		403b.	Personality Development & Soft Skills	2017	√		√
		405a	Security Market Operations	2017	√		√
	M. Com Financial Management	101	Accounting Standards & Reporting	2017	√		
		102	Financial Management	2017	√		√
		103	Business Environment and Policy	2017		√	√
		104	Organisational Behaviour	2017	√		√
		105a	Quantitative Techniques for Business Decisions	2017			√
		106	Human Values & Professional Ethics - I	2017		√	√
		201	Advanced cost Accounting	2017	√		
		202	Financial Markets and Services	2017	√		√
		203	Strategic Financial Management	2017	√		√
		204	Corporate Governance	2017	√	√	
		205a	Working Capital Management	2017	√	√	
		206a	e-Banking Operations	2017			√
		301	Security Analysis and Portfolio Management	2017	√		√
		302	Accounting for Managerial Decisions	2017	√		√
		303a.	Tally with GST Application	2017	√		√
		303c.	Tax planning & Management	2017	√		√
		304a	International Financial Management	2017	√		√
		305a	Fundamentals of Accounting	2017			√
		401	Financial Derivatives	2017			√
		402	Project Planning & Control	2017	√		√
		403a.	Insurance Management	2017	√		√
		404d.	Mergers & Acquisitions	2017	√		√
		405a	Security Market Operations	2017	√		√
48	B.Pharmacy	BPH 101A	Mathematics (For Bi.P.C. Stream)	2017	√		
		BPH 101B	Biology (For M.P.C. Stream)	2017	√		
		BPH 101C	Biology Practicals (For M.P.C. Stream)	2017	√	√	√
		BPH 102	English & Soft Skills	2017	√		√
		BPH 103	Pharmaceutical. Inorganic Chemistry	2017	√	√	
		BPH 104	Pharmaceutical Organic Chemistry-I	2017	√	√	
		BPH 105	Human Anatomy and Physiology	2017	√		

BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2017	✓	✓	✓
BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2017	✓	✓	✓
BPH 108	Human Anatomy and Physiology Practicals	2017	✓	✓	✓
BPH 109	General & Dispensing Pharmacy	2017	✓		
BPH 110	Pharmaceutical Organic Chemistry-II	2017	✓		
BPH 111	Computer applications	2017	✓		✓
BPH 112	Pharmacognosy I	2017	✓		
BPH 113	Human Anatomy and Physiology and Pathophysiology	2017	✓		
BPH 114	General & Dispensing Pharmacy Practicals	2017	✓	✓	✓
BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2017	✓	✓	✓
BPH 116	Computer applications Practicals	2017	✓	✓	✓
BPH 117	Pharmacognosy I	2017	✓	✓	✓
	Practicals				
BPH 201	Physical pharmacy –I (Theory)	2017	✓		
BPH 202	Pharmaceutical Engineering (Theory)	2017	✓		
BPH 203	Pharmaceutical organic chemistry III (Theory)	2017	✓		
BPH 204	Pharmaceutical Biochemistry (Theory)	2017	✓		
BPH 205	Environmental studies (Theory)	2017	✓		
BPH 206	Physical pharmacy –I (Practical)	2017	✓	✓	✓
BPH 207	Pharmaceutical Engineering (Practical)	2017	✓	✓	✓
BPH 208	Pharmaceutical organic chemistry III (Practical)	2017	✓	✓	✓
BPH 209	Pharmaceutical Biochemistry (Practical)	2017	✓	✓	✓
BPH 210	Physical Pharmacy II (Theory)	2017	✓		
BPH 211	Pharmaceutical Analysis I (Theory)	2017	✓		
BPH 212	Pharmaceutical Technology I (Theory)	2017	✓		
BPH 213	Pharmacognosy II (Theory)	2017	✓		
BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2017	✓		
BPH 215	Pharmaceutical pharmacy II (Practical)	2017	✓	✓	✓
BPH 216	Pharmaceutical Analysis I (Practical)	2017	✓	✓	✓
BPH 217	Pharmaceutical technology I (Practical)	2017	✓	✓	✓
BPH 218	Pharmacognosy II (Practical)	2017	✓	✓	✓
BPH 301	Pharmaceutical Technology-II	2017	✓		
BPH 302	Medicinal chemistry – I	2017	✓		
BPH 303	Pharmacology – I	2017	✓		
BPH 304	Pharmaceutical microbiology	2017	✓		
BPH 305	Drug store and Industrial Management and Marketing	2017	✓		
BPH 306	Pharmaceutical Technology-II	2017	✓		
BPH 307	Medicinal chemistry-I practicals	2017	✓	✓	✓
BPH 308	Pharmaceutical Microbiology practicals	2017	✓	✓	✓
BPH 309	Medicinal chemistry-II (theory)	2017	✓		
BPH310	Pharmacology II– Theory	2017	✓		

	BPH311	Pharmaceutical. Analysis II(Theory)	2017	✓		
	BPH312A	Forensic Pharmacy– Theory	2017	✓		
	BPH312B	Clinical Trials– Theory	2017	✓		
	BPH312 C	Industrial.Pharmacy & Cosmetic Technology– Theory	2017	✓		
	BPH313	Medicinal Chemistry-II Practicals	2017	✓	✓	✓
	BPH314	Pharmacology-II Practicals	2017	✓	✓	✓
	BPH315	Pharmaceutical. Analysis II Practicals	2017	✓	✓	✓
	BPH 401	Medicinal Chemistry-III	2017	✓		
	BPH 402	Pharmacology-III	2017	✓		
	BPH 403:	Pharmacognosy-III	2017	✓		
	BPH 404:	Biopharmaceutics & Pharmacokinetics	2017	✓		
	BPH 405A:	Chemistry Of Natural Products	2017	✓		
	BPH 405B:	Hospital & Community Pharmacy	2017	✓		
	BPH 405C	Pharmacovigilance	2017	✓	✓	
	BPH 406	Medicinal Chemistry-III Practicals	2017	✓	✓	✓
	BPH 407	Pharmacology-III Practicals	2017	✓	✓	✓
	BPH 408	Pharmacognosy-III Practicals	2017	✓	✓	✓
	BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2017	✓	✓	✓
	BPH 410:	Novel Drug Delivery Systems	2017	✓		
	BPH 411	Pharmaceutical Biotechnology (Theory)	2017	✓		
	BPH 412:	Clinical Pharmacy & Therapeutics	2017	✓		
	BPH 414	Project Work &Seminar	2017	✓	✓	✓
M.Pharmacy (Pharmacology)	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2017	✓		
	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2017	✓		
	MPH 103	Practical I	2017	✓	✓	✓
	MPH 104	Practical-II(MAT)	2017	✓	✓	✓
	MPH 105	Modern Analytical Techniques and biostatics Theory	2017	✓		
	MPH 106	Human Values and Professional Ethics-I	2017	✓		
	MPH 107	Comprehensive Viva	2017	✓	✓	✓
	MPH 201A (Pharmacology)	Molecular Pharmacology	2017	✓		
	MPH 202 A	Methods in Drug Evaluation	2017	✓		
	MPH 203	Practical I	2017	✓	✓	✓
	MPH 204	Practical-II(BPK)	2017	✓	✓	✓
	MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2017	✓		
	MPH 206	Human Values and Professional Ethics-II	2017	✓		
	MPH 207	Comprehensive Viva	2017	✓	✓	✓

CYT02	Physical Chemistry	2016	✓		✓
MET41	Mechanical Technology	2016	✓	✓	✓
ENT01	English	2016	✓		✓
CSP02	Data Structures Laboratory	2016	✓	✓	✓
ENP01	English Communication Lab	2016	✓		✓
MAT03	Engg Mathematics-III	2016	✓	✓	✓
CET44	Mechanics of Solids	2016	✓	✓	✓
CYT03	Organic Chemistry	2016	✓		✓
CHT01	Momentum Transfer	2016	✓	✓	✓
CHT03	Inorganic Chemical Technology	2016	✓		✓
CHP02	Chemical Analysis lab	2016	✓	✓	✓
MAT04	Probability & Statistics	2016	✓		✓
CHT04	Chem Engg Thermodynamics-I	2016	✓	✓	✓
CHT05	Mechanical Unit Operations	2016	✓		✓
CHT06	Industrial Effluent Treatment	2016	✓		✓
CHT07	Material Technology	2016	✓		✓
CHT08	Organic Chemical Technology	2016	✓	✓	✓
CHP03	Mechanical Unit Operations lab	2016	✓	--	✓
MAT05	Numerical Methods for Chemical Engineering	2016	✓	✓	✓
CHT09	Chem Engg Thermodynamics-II	2016	✓	✓	✓
CHT10	Heat Transfer	2016	✓		✓
CHT11	Mass Transfer Operations-I	2016	✓	✓	✓
CHT12	Process Instrumentation	2016	✓	✓	✓
CHP06	Computational Techniques lab	2016	✓		✓
CHT13	Mass Transfer Operations-II	2016	✓	✓	✓
CHT14	Chemical Reaction Engg-I	2016	✓		✓
CHT15	Process Dynamics & Control	2016	✓	✓	✓
CHT16	Bioprocess Engineering	2016	✓	✓	✓
MET42	Industrial Management	2016	✓	✓	✓
CHP07	Mass Transfer Operations Lab-I	2016	✓		✓
CHP08	Process Dynamics & Control Lab	2016	✓		✓
CHT17	Chem. Reaction Engineering-II	2016	✓	✓	✓
CHT19	Plant Design & Proc. Economics	2016	✓		✓
CHT20	Process Modeling& Simulation	2016	✓	✓	✓
CHP09	Mass Transfer Operations Lab-II	2016	✓		✓
CHP10	Chem Reaction Engg Lab	2016	✓	✓	✓
CHT24	Computer Aided Process Equipment Design & Drawing	2016	✓	✓	✓
CHP11	Project Work	2016	✓		✓
CHP12	Internship/Mini Project	2016	✓	✓	✓
MACHT01	Probability & Statistics For Chemical Engineering	2016	✓	✓	✓

M.Tech - Chemical Engineering	CHCHT 02	Process Plant Simulation	2016	✓	✓	✓
	CHCHE 12	Fluidization Engineering	2016	✓		✓
	CHCHP01	Computational Techniques Lab	2016	✓		✓
	CHCHS01	Seminar-I	2016	✓	✓	✓
	CHCHT 05	Chemical Reactor Theory	2016	✓		✓
	CHCHT 06	Advanced Control Systems	2016	✓	✓	✓
	CHCHT 07	Process Synthesis And Analysis	2016	✓		✓
	CHCHE 19	Enzyme Science & Engineering (Elective-III)	2016	✓	✓	✓
	CHT 18B	Safety and Loss Prevention in Process Industries (Open Elective)	2016	✓	✓	✓
	CHCHP02	Advanced Chemical Engineering Lab	2016	✓		✓
	CHCHS02	Seminar-II	2016	✓	✓	✓
	CHCHV01	Comprehensive Viva Voce	2016	✓	✓	✓
50 B. Tech - Civil Engineering	MAT01	Engg Mathematics – I	2016	✓	✓	✓
	CST01	Computer Programming	2016	✓	✓	✓
	PHT01	Engg. Physics	2016	✓	✓	✓
	CYT01	Engg Chemistry	2016	✓		✓
	CET01	Environmental Studies	2016	✓		✓
	MET01	Engg Graphics	2016	✓	✓	✓
	MEP01	Workshop Practice	2016	✓		✓
	MAT02	Engg Mathematics-II	2016	✓	✓	✓
	CST02	Data Structures	2016	✓		✓
	EET43	Basics of Elec.&Electr.Engg	2016	✓	✓	✓
	CYT02	Physical Chemistry	2016	✓	✓	✓
	MET41	Mechanical Technology	2016	✓		✓
	ENT01	English	2016	✓	✓	✓
	CSP02	Data Structures Laboratory	2016			
	ENP01	English Communication Lab	2016	✓	✓	✓
	MAT03	Engg Mathematics-III	2016	✓	✓	✓
	CET44	Mechanics of Solids	2016	✓		✓
	CYT03	Organic Chemistry	2016	✓		✓
	CHT01	Momentum Transfer	2016	✓	✓	✓
	CHT03	Inorganic Chemical Technology	2016	✓		✓
	CHP02	Chemical Analysis lab	2016	✓	✓	✓
	MAT04	Probability & Statistics	2016	✓		✓
	CHT04	Chem Engg Thermodynamics-I	2016	✓	✓	✓
	CHT05	Mechanical Unit Operations	2016	✓	✓	✓
	CHT06	Industrial Effluent Treatment	2016	✓	✓	✓
	CHT07	Material Technology	2016	✓	✓	✓
	CHT08	Organic Chemical Technology	2016	✓	✓	✓

CHP03	Mechanical Unit Operations lab	2016	✓		✓
MAT05	Numerical Methods for Chemical Engineering	2016	✓		✓
CHT09	Chem Engg Thermodynamics-II	2016	✓	✓	✓
CHT10	Heat Transfer	2016	✓		✓
CHT11	Mass Transfer Operations-I	2016	✓	✓	✓
CHT12	Process Instrumentation	2016	✓		✓
CHP06	Computational Techniques lab	2016	✓	✓	✓
CHT13	Mass Transfer Operations-II	2016	✓	✓	✓
CHT14	Chemical Reaction Engg-I	2016	✓		✓
CHT15	Process Dynamics & Control	2016	✓	✓	✓
CHT16	Bioprocess Engineering	2016			
MET42	Industrial Management	2016	✓	✓	✓
CHP07	Mass Transfer Operations Lab-I	2016	✓	✓	✓
CHP08	Process Dynamics & Control Lab	2016	✓		✓
CHT17	Chem. Reaction Engineering-II	2016	✓		✓
CHT19	Plant Design & Proc. Economics	2016	✓	✓	✓
CHT20	Process Modeling & Simulation	2016	✓		✓
CHP09	Mass Transfer Operations Lab-II	2016	✓	✓	✓
CHP10	Chem Reaction Engg Lab	2016	✓		✓
CHT24	Computer Aided Process Equipment Design & Drawing	2016	✓	✓	✓
CHP11	Project Work	2016	✓	✓	✓
CHP12	Internship/Mini Project	2016	✓		
M. Tech- Geo-Technology	CEMAC 501	Advanced Engineering Mathematics	2016	✓	✓
	CEGTC 502	Basic Geomechanics and Soil Behaviour	2016	✓	✓
	CEGTC 503	Soil Dynamics & Machine Foundations	2016		
	CEGTC 504	Experimental Geomechanics	2016	✓	✓
	CEGTE 505	Theory Of Thin Plates and Shells	2016	✓	✓
	CEGTE 506	Hydrogeology And Geophysical Exploration of Groundwater	2016	✓	✓
	CEGTP 507	Geotechnical Engg. (Practical)	2016	✓	✓
	CEGTS508	Seminar –I	2016	✓	✓
	CEGTC 601	Advanced Foundation Engineering	2016	✓	✓
	CEGTC 602	Ground Improvement Techniques	2016	✓	✓
	CEGTC 603	Earth and Earth Retaining Structures	2016	✓	✓
	CEGTC 604	Numerical Methods in Geotechnical Engineering	2016	✓	✓
	CEGTE 605	Structural Dynamics	2016	✓	✓
	CEGTE 606	Open Elective (Disaster Management)	2016	✓	✓
	CEGTS 607	Computing Techniques (Practical)	2016	✓	✓
	CEGTS 608	Seminar – I	2016		
	CEGTV 609	Comprehensive Viva-Voce – I	2016	✓	✓

		CEGTD701	Dissertation work (As listed in regulations)	2016	✓	✓	✓
		CEMAC 501	Advanced Engineering Mathematics	2016	✓		✓
	M. Tech-Structural Engineering	CESEC 502	Theory of Elasticity	2016	✓	✓	✓
		CESEC 503	Matrix Methods of Structural Analysis	2016	✓		✓
		CESEC 504	Advanced Prestressed Concrete	2016	✓	✓	✓
		CESEP 507	Advanced Structural Engg. (Practical)	2016	✓		✓
		CESES 508	Seminar -I	2016	✓	✓	✓
		CESEC 601	Finite Element Structural Analysis	2016	✓	✓	✓
		CESEC 602	Theory of Plates	2016	✓		
		CESEC 603	Structural Dynamics	2016			
		CESEC 604	Advanced Structural Concrete Design	2016	✓		✓
		CESEP 607	Computing Techniques (Practical)	2016	✓	✓	✓
		CESES 608	Seminar – II	2016			
		CESEV 609	Comprehensive Viva-Voce	2016	✓	✓	✓
		CESED 701	Dissertation Work	2016	✓	✓	✓
		1	Advanced Reinforced Concrete Design	2016	✓		✓
		2	Advanced Concrete Technology	2016	✓		✓
		3	Advanced Structural Steel Design	2016	✓	✓	✓
		4	Fracture Mechanics	2016	✓		✓
		5	Industrial Structures	2016	✓	✓	✓
		6	Pre-Fabricated Concrete Structures	2016	✓		✓
		7	Tall Structures	2016	✓	✓	✓
		8	Soil Structure Interaction	2016	✓	✓	✓
		9	Structural Optimization	2016	✓		✓
		10	Experimental Stress Analysis and Instrumentation	2016	✓	✓	✓
		11	Maintenance And Rehabilitation of Structures	2016			
		12	Stability Of Structures	2016	✓		✓
		13	Advanced Metal Structures	2016	✓	✓	✓
		14	Earthquake Resistant Design of Structures	2016	✓		✓
		15	Design Of Shell Structures	2016	✓	✓	✓
		16	Bridge Engineering	2016	✓		✓
		CESEE	Open Electives	2016	✓	✓	✓
		1	Disaster Management	2016	✓	✓	✓
		2	Green Technology	2016	✓		
		CST01	Computer Programming	2016	✓	✓	✓
51	B.Tech - Computer Science and Engineering	CET02	Basic Civil Engineering	2016	✓	✓	✓
		MET02	Basic Mechanical Engineering	2016			
		CSP01	Computer Programming Lab	2016	✓		✓
		ENP01	English Communication Lab	2016	✓	✓	✓

MAT02	Engineering Mathematics – II	2016	✓		✓
CST02	Data Structures	2016	✓	✓	✓
EET 02	Circuit Theory (Branch Subject)	2016	✓		✓
MET01	Engineering Graphics	2016	✓	✓	✓
CSP02	Data Structures Lab	2016	✓	✓	✓
MEP01	Workshop Practice	2016	✓		
CST 05	Java and Advanced Data Structures	2016			
MAT 04	Probability and Statistics	2016	✓		✓
CSP 03	Java and Advanced Data Structures Laboratory	2016	✓	✓	✓
CST 06	Computer Organization	2016			
CST 07	Database Management Systems	2016	✓	✓	✓
CST 08	Python Programming Language	2016	✓	✓	✓
CSP 05	Database Management Systems Lab	2016	✓		✓
CST 11	Operating Systems	2016	✓		✓
CST 12	Computer Networks	2016	✓	✓	✓
CST 13	Principles of Programming Languages	2016	✓		✓
CST 14	Software Engineering	2016	✓	✓	✓
CSP 07	CN and PPL Laboratory	2016	✓		✓
CSP 08	Operating Systems & UML Laboratory	2016	✓	✓	✓
CST 16	Design and Analysis of Algorithms	2016	✓	✓	✓
CST 18	Micro Processor and Interfacing	2016			
CST 19	Software Project Management	2016	✓		✓
CSE 01	Massive Online Open Course	2016	✓	✓	✓
CSP 10	Microprocessors and Interfacing Laboratory	2016	✓		✓
CSP 11	Algorithms and System Programming Laboratory	2016	✓	✓	✓
CST 12	Soft Skills Laboratory	2016	✓		✓
CSE 20	Cyber Law and Ethics	2016	✓	✓	✓
CST 21	Artificial Intelligence	2016	✓	✓	✓
CST 22	Compiler Construction	2016	✓		
CSE 02	Elective –II Cyber Security	2016			
CSE 03	Elective-III Data Analytics	2016	✓		✓
HUT 10	Managerial Accountancy	2016	✓	✓	✓
CSP 13	Core Laboratory	2016			
CSP 14	Elective -I Laboratory	2016	✓	✓	✓
CSP 15	Project Work-I	2016	✓	✓	✓
MET 42	Industrial Management	2016	✓		✓
HUT 02	Managerial economics	2016	✓		✓
CSE17	Elective-II Lab	2016	✓	✓	✓
CSP 18	Project Work-II	2016	✓		✓
CSP 19	Seminar-I	2016	✓	✓	✓
CSP 20	Comprehensive Viva-Voice -2	2016	✓		✓

		CSP 21	Internship/Mini Project Viva- Voice Exam	2016	✓		
		CSCOT 01C	Data Structures and Algorithms	2016	✓		✓
	M.Tech - Computer Science and Engineering	CSCOT 02C	Advanced topics in Database Management Systems	2016	✓	✓	✓
		CSCOT 03C	Cryptography & Network Security	2016	✓		✓
		CSCOT 07E	Machine Learning	2016	✓	✓	✓
		CSCOT 08E	Research Methodology	2016	✓		✓
		CSCOT 09E	Internet of Things	2016	✓	✓	✓
		CSCOTP 01	Core –I Laboratory	2016	✓	✓	✓
		CSCOP 02	Elective-I Laboratory	2016	✓		
		CSCOS 01	Seminar-I	2016			
		CSCOV 01	Comprehensive Viva-Voice-I	2016	✓		✓
		CSCOT 04C	Advances in Artificial Intelligence	2016	✓	✓	✓
		CSCOT 05C	Topics in Operating Systems	2016			
		CSCOT 06C	Distributed and Cloud Computing	2016	✓	✓	✓
		CSCOT 10E	Artificial Neural Networks	2016	✓	✓	✓
		CSCOT E11	Big Data Analytics	2016	✓		✓
		CSCOT 12E	Cyber Security	2016	✓		✓
		CSCOP 03	Core-II Laboratory	2016	✓		✓
		CSCOP 04	Elective –II Laboratory	2016	✓	✓	✓
		CSCOS 02	Seminar-II	2016	✓		✓
		CSCOV 02	Comprehensive Viva-Voice-II	2016	✓	✓	✓
		MCSE22P	Dissertation	2016	✓		✓
52	B.Tech - Electrical and Electronics Engineering	MAT01	Engineering Mathematics-I	2016	✓		✓
		CST01	Computer Programming	2016	✓	✓	✓
		ENT01	English	2016	✓		✓
		CSP01	Computer Programming Lab	2016	✓	✓	✓
		ENP01	English Communication Lab	2016	✓		✓
		CST02	Data Structures	2016	✓	✓	✓
		EET02	Circuit Theory	2016	✓	✓	✓
		EET 03	Network Analysis	2016	✓		
		ECT02	Electronic Devices	2016			
		EET04	Electromagnetic Fields	2016	✓		✓
		EETO5	Generation of Electrical Power	2016	✓	✓	✓
		EET06	Electromechanical Energy Conversion-I	2016			
		EET07	Signals and Systems	2016	✓	✓	✓
		ECT55	Analog Circuits	2016	✓	✓	✓
		ECT56	Digital Logic Design	2016	✓		✓
		EET11	Power Systems-I	2016	✓		✓
		EET12	Electromechanical Energy Conversion-II	2016	✓		✓

		EET13	Linear Control Systems	2016	✓	✓	✓
		ECT57	Pulse and Digital Circuits	2016	✓		✓
		ECT58	Analog and Digital IC Applications	2016	✓	✓	✓
		EET14	Power Systems-II	2016	✓		✓
		EET15	Electromechanical Energy Conversion-III	2016	✓	✓	✓
		EET16	Advanced Control System	2016	✓		✓
		EET17	Microprocessors and Microcontrollers	2016	✓	✓	✓
		EET18	Power System Analysis	2016	✓		✓
		EET19	Power Electronics	2016	✓	✓	✓
		EET10	Electrical and Electronic Measurements	2016	✓	✓	✓
		EET20	Power System Operation and Control	2016	✓		
		EET21	Power Semiconductor Controlled Drives	2016			
		EET23	Power System Protection	2016	✓		✓
		EEL-01	Elective –II (Department)	2016	✓	✓	✓
		EEL02	Elective-III(Department)	2016			
		EE PSC 101A	Computer Methods in Power Systems	2016	✓	✓	✓
	M.Tech - Power Systems	EE PSC 102A	Digital Control Systems And Design	2016	✓		✓
		EE PSC 103	Electrical Power distribution systems	2016	✓	✓	✓
		EE PSE 102	Energy auditing, Conservation & management	2016	✓		✓
		EE PSE 105	Smart grid Technologies and applications	2016	✓	✓	✓
		EE PSC 201 A	Advanced Power System Protection	2016	✓		✓
		EE PSE 201	Deregulation of Power Systems	2016	✓	✓	✓
		EE PSE 202	Expert Systems	2016	✓	✓	✓
		EE PSE 203	FACTS and Custom Power Devices	2016	✓		
		EE PSE 204	Industrial drives & Control	2016			
		EE PSE 205	Embedded Systems	2016	✓		✓
		EE PSE 206	HV Engineering	2016	✓	✓	✓
		EE PSE 208	Renewable Energy Sources	2016	✓		
53	B.Tech - Electronics and Communication Engineering	MAT01	Engineering Mathematics- I	2016	✓	✓	✓
		CET02	Basic Civil Engineering	2016	✓		✓
		MET02	Basic Mechanical Engineering	2016	✓	✓	✓
		ENT01	English	2016	✓		✓
		ENP01	English Communication Lab	2016	✓	✓	✓
		MAT02	Engineering Mathematics II	2016	✓		✓
		CST02	Data structures	2016	✓	✓	✓
		PHY01	Engineering Physics	2016	✓		✓
		CYT01	Engineering Chemistry	2016	✓	✓	✓
		EET02	Circuit theory	2016	✓	✓	✓
		MET01	Engineering Graphics	2016	✓		

	MAT03	Engineering Mathematics – III	2016			
	EET03	Network Analysis	2016	✓		✓
	ECT02	Electronic Devices	2016	✓	✓	✓
	ECT03	Signals & Systems	2016			
	ECT04	Electromagnetic Fields & Waves	2016			
	EET41	Electrical Technology	2016	✓	✓	✓
	ECT05	Electronic Circuits Analysis	2016	✓		✓
	ECT06	Pulse and Digital Circuits	2016	✓	✓	✓
	ECT07	Switching Theory and Logic Design	2016	✓		✓
	ECT08	Random Signals and Stochastic Process	2016	✓	✓	✓
	ECT09	Analog Communication	2016	✓		✓
	ECT10	Transmission line and waveguides	2016	✓	✓	✓
	EET42	Control Systems	2016	✓	✓	✓
	EOT01	Economics	2016	✓		
	AOT01	Accountancy	2016			
	ECT11	Analog IC Applications	2016	✓		✓
	ECT12	Antennas and Wave Propagation	2016	✓	✓	✓
	ECT13	Electronic Measurements and Instrumentation	2016	✓		
	ECT14	Digital Communication	2016	✓	✓	✓
	ECT15	Computer Organization	2016	✓		✓
	MET43	Management Science	2016	✓	✓	✓
	ECT16	Digital IC Design Applications	2016	✓		✓
	ECT17	VLSI Design	2016	✓	✓	✓
	ECT18	Microprocessors and Interfacing	2016	✓		✓
	ECT19	Microwave Techniques	2016	✓	✓	✓
	ECT20	Digital Signal Processing	2016	✓		✓
	EC-OE01/ EC-OE02	Elective -I (Open Elective)	2016	✓	✓	✓
	ECT21	Radar Engineering	2016	✓	✓	✓
	ECT22	Optical Communication	2016	✓		
	ECT23	Mobile Communication	2016			
	ECT24	Communication Networks	2016	✓		✓
	ECT25	Elective-II (Dept Elective)	2016	✓	✓	✓
	ECCST 01	Advanced Digital Communication Techniques	2016	✓	✓	✓
M.Tech-Communication Systems	ECCST 02	Advanced Digital Signal Processing	2016	✓		✓
	ECCST 03	Communication Networks	2016	✓	✓	✓
	ECCST 04	Radiation Systems	2016	✓		✓
	ECCST 18	AUDIT Course	2016	✓	✓	✓
	ECCST 21	Image and Video Processing	2016	✓		✓
	ECCST 22	Microwave Integrated Circuits	2016	✓	✓	✓
	ECCST 23	Optical Communication Networks	2016	✓		✓

		ECCST 24	Wireless Communication	2016	✓	✓	✓
		ECCST 61	AUDIT Course	2016	✓	✓	✓
		ECCSS 21	Seminar – 2	2016	✓		
		ECCSV 21	Comprehensive Viva voce	2016			
		ECCSJ 21	Dissertation	2016	✓		✓
		ECCST 01	Advanced Digital Communication Techniques	2016	✓	✓	✓
	M.Tech-Signal Processing	ECCST 02	Advanced Digital Signal Processing	2016	✓		✓
		ECSPT 03	Multirate Signal processing	2016	✓	✓	✓
		ECSPT 04	Adaptive arrays	2016	✓		✓
		ECCST 18	AUDIT Course	2016	✓	✓	✓
		ECCST 21	Image and Video Processing	2016	✓		✓
		ECCST 22	Microwave Integrated Circuits	2016	✓	✓	✓
		ECSPT 23	Radar Signal Processing	2016	✓		✓
		ECSPT 24	Adaptive Signal Processing	2016	✓	✓	✓
		ECCST 61	AUDIT Course	2016	✓		
		ECCSV 21	Comprehensive Viva voce	2016			
		ECCSJ 21	Dissertation	2016	✓		✓
		MAT01	Engineering Mathematics – I	2016	✓	✓	✓
54	B.Tech - Mechanical Engineering	CST01	Computer programming	2016	✓		✓
		CET01	Environmental Studies	2016	✓	✓	✓
		PHT01	Engineering Physics	2016	✓		✓
		CYT01	Engineering Chemistry	2016	✓	✓	✓
		MET01	Engineering Graphics	2016	✓		✓
		MAT02	Engineering Mathematics – II	2016	✓	✓	✓
		CST02	Data Structures	2016	✓		✓
		EET01	Basic Electrical Engineering	2016	✓	✓	✓
		ECT01	Basic Electronics Engineering	2016	✓	✓	✓
		CET41	Engineering Mechanics	2016	✓		
		MAT03	Mathematics – III	2016	✓		
		CET42	Mechanics of Solids	2016	✓		✓
		FEC01	Professional Ethics	2016	✓		
		MET03	Advanced Engg. Graphics	2016	✓	✓	✓
		MET04	Manufacturing Processes	2016	✓		✓
		EOT01	Managerial Economics	2016	✓	✓	✓
		MET05	Kinematics of Machinery	2016	✓		✓
		MET06	Thermal Engineering	2016	✓	✓	✓
		MET07	Machine Tools and Metal Cutting	2016	✓		✓
		CET43	Fluid Mechanics and Hydraulic Machinery	2016	✓	✓	✓
		MET08	Machine Drawing	2016	✓		✓

		COT02	Managerial Accountancy	2016	✓	✓	✓
		MET09	Mechanical Measurements and Metrology	2016	✓	✓	✓
		MET10	Dynamics of Machinery (DOM)	2016	✓		✓
		MET11	IC Engines and Gas Turbines	2016	✓	✓	✓
		MET12	Materials Science and Metallurgy	2016	✓		✓
		MET13	Design of Machine Members – I	2016	✓	✓	✓
		MET15	Operations Research	2016	✓		✓
		MET16	Design of Machine Members – II	2016	✓	✓	✓
		MET17	Industrial Engineering and Management	2016	✓		✓
		MEOE	Open Elective – I (OPE – I)	2016	✓	✓	✓
		MEDE	Departmental Elective – I (DPE-I)	2016	✓	✓	✓
		MET18	Analysis and Control of Production Systems	2016	✓		
		MET19	Tool Design	2016	✓		
		MET20	Automobile Engineering	2016	✓		✓
		MET21	Finite Element Method	2016	✓		
		MET22	Heat Transfer	2016	✓	✓	✓
		MEOE	Open Elective – II (OPE II)	2016	✓		✓
		MEDE	Departmental Elective II (DPE II)	2016	✓	✓	✓
	M.Tech- Industrial Engineering	MAME T01	Applied Probability and Statistics	2016	✓	✓	✓
		MEIE T01	Operations Research	2016	✓		✓
		MEIE P01	Industrial Engineering Lab	2016	✓	✓	✓
		MEIE T04	Supply Chain Management	2016	✓	✓	✓
		MEIE T05	Quality Control and Reliability Engineering	2016	✓		
		MEIE T06	Human Resources Management	2016	✓		
		MEIE T07	Advanced Operations Research	2016	✓		✓
		MEIE P02	Simulation Lab	2016	✓		
		MEIE E01	System Dynamics	2016	✓	✓	✓
		MEIE E04	Facilities Planning	2016	✓		✓
		MEIE E05	Service Engineering and Management	2016	✓	✓	✓
		MEIE E06	Discrete Event System Simulation	2016	✓	✓	✓
		MEIE E07	Financial Management and Control	2016	✓		✓
		MEIE E08	Marketing Management	2016	✓	✓	✓
		MEPE 09	Energy Management	2016	✓	✓	✓
		MEPEE10	Design for Manufacturing	2016	✓		
		MEIE E09	Design and Analysis of Experiments	2016	✓		
	M.Tech- Production Engineering	MAME T01	Applied Probability and Statistics *	2016	✓		
		MEPE T01	Advanced Materials Technology	2016	✓		
		MEPE T02	Advanced Manufacturing Processes	2016	✓		✓
		PECP 01	Production Engineering Lab	2016	✓		

MEPE T03	Computer Integrated Manufacturing	2016	✓	✓	✓
MEPE T04	Automation in Manufacturing	2016	✓		✓
MEPE T05	Additive Manufacturing	2016	✓	✓	✓
MEPE T06	Metal Cutting and Cutting Tool Design	2016	✓	✓	✓
PECP 03	Production Engineering Lab-II	2016	✓		✓
PECP 04	CAD Lab	2016	✓	✓	✓
MEPE E01	Robotics	2016	✓	✓	✓
MEPE E02	Advanced Casting Technology	2016	✓		
MEPE E03	Oil Hydraulics and Pneumatics	2016	✓		
MEPE E05	Expert Systems in Manufacturing	2016	✓		
MEPE E06	Advanced Welding Processes	2016	✓		
MEPE E07	Metal forming Technology	2016	✓		✓
MEPE E08	Finite Element Method	2016	✓		
MEPE E09	Energy Management *	2016	✓	✓	✓
MEPE E10	Design for Manufacturing *	2016	✓		✓
MEOE T02	Non Conventional Energy Sources *	2016	✓	✓	✓

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	
1	Adult & Continuing Education	MA AE 1.1	Alternative learning systems	2018			√	
		MA AE 1.2	Policy Studies In Adult/Continuing Education	2018				
		MA AE 1.3	Adult Psychology And Learning	2018			√	
		MA AE 1.4	Socio-Philosophical Foundation Of Adult Education	2018				
		MA AE 1.5	Communication Methods in Adult Education	2018		√		
		MA AE 1.6	Human Values And Professional Ethics-I	2018				
		MAAE-2.1	Recent Trends In Adult And Continuing Education	2018				
		MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2018		√		√
		MAAE-2.3	Research Methods In Adult Education	2018		√		√
		MAAE-2.4	Field Work & Practical Assignments	2018		√		√
		MAAE-2.5	Management Of Adult/Continuing Education	2018				
		MAAE-2.6	Human Values And Professional Ethics-II	2018				
		MAAE-3.1	Training In Adult And Continuing Education	2018		√		√
		MAAE-3.2	Comparative Studies In Adult Education	2018				
		MAAE-3.3	Material Development For Adult& Continuing Education	2018				√
		MAAE-3.4A	Peoples' Participation And Development	2018		√		
		MAAE-3.4B	Vocational Education & Training	2018		√		
		MAAE-3.4C	Guidance And Counselling In Adult/Continuing Education	2018				
		MAAE-3.4D	Inclusive Education	2018				
		MAAE-3.5A	Information Technology For Continuing Education	2018				
		MAAE-3.5B	Entrepreneurship Development	2018		√	√	
		MAAE-3.5C	Women's Education & Development	2018				
		MAAE-4.1	Monitoring & Evaluation	2018		√		
		MAAE-4.2	Human Resources Management& Development	2018				√
		MAAE-4.3	Dissertation / Project Work	2018				
		MAAE-4.4 A	Environmental Education	2018				
		MAAE-4.4 B	Statistical Methods For Social Research	2018				√
		MAAE-4.4 C	Development Strategies & Voluntarism	2018		√		
		MAAE-4.4 D	Population Education	2018				
		MAAE-4.5 A	Adult Education And Extension	2018				
		MAAE-4.5 B	Skill Development Initiatives	2018				
		MAAE-4.5 C	Career Guidance And Counselling	2018				
	Rural Development & Management							
		MARDM-1.3	Indian Economic Scene	2018	√			
		MARDM-2.1	Rural Industrialisation	2018	√		√	
		MARDM-2.3	Agriculture & Rural Bio Technology	2018			√	
		MARDM2.4	Field Work& Practicals	2018			√	
		MARDM-2.5	Rural Marketing & Management	2018			√	
		MARDM-3.1	Natural Resources Management -Land	2018	√		√	
		MARDM3.2	Natural Resources Management -Water	2018	√		√	
		MARDM-3.3	Natural Resources Management-Vegetation	2018	√	√	√	
		MARDM-3.4a	Communications For Rural Development	2018			√	
		MARDM3.4b	Micro Finance & Women Empowerment	2018	√		√	
		MARDM-1.4c	Economics Of Agriculture	2018			√	

		MARDM3.5b	Skill Development Initiatives	2018			√
		MARDM-4.1	Agriculture And Rural Development	2018	√	√	
		MARDM-4.2	Rural Credit & Marketing	2018	√	√	
		MARDM4.3	Dissertation/Project Work	2018	√		√
		MARDM-4.1c	Rural Entrepreneurship	2018		√	
		MARDM- 4.1d	Vocational Education & Training	2018	√	√	√
		MARDM-5.1a	Human Resources Development In Rural Sectors	2018	√		√
2	AIHC & Archaeology	AIHC&A-101	History of Ancient India upto 550 A.D.	2018			
		AIHC&A-102	History of India from 1206 A.D. to 1526 A.D.	2018			
		AIHC&A-103	History of Andhras upto 1323 A.D.	2018			
		AIHC&A-104	Ancient World Civilizations.	2018			
		AIHC&A-105A	Principles and Methods of Archaeology.	2018			√
		AIHC&A-105B	Advanced Archaeological Theory and Research Methodology	2018	√		
		AIHC&A-106A	Social and Political Institutions in Ancient India	2018			
		AIHC&A-106B	Indian Religious Movements.	2018			
		AIHC&A-107	Human Values and Professional Ethics-I.	2018			
		AIHC&A-201	History of India from 550 A.D to 1206 A.D.	2018			
		AIHC&A-202	History of Medieval India from 1526 A.D to 1707 A.D.	2018			
		AIHC&A-203	History of South India from 1323 A.D. to 1724 A.D.	2018			
		AIHC&A-204	Pre and Proto Historic Cultures of India	2018	√		
		AIHC&A-205A	History of Indian Archaeology	2018	√		√
		AIHC&A-205B	Cultural Heritage Management	2018			
		AIHC&A-206 A	India's Early Cultural Contacts with other Countries	2018			
		AIHC&A-206 B	Early History of South East Asia	2018			
		AIHC&A -207	Human Values and Professional Ethics-II	2018			
		AIHC&A-301	History of Indian Architecture	2018	√		
		AIHC&A-302	Epigraphy	2018			√
		AIHC&A-303A	History of Modern Andhra from 1724 A.D. to1956 A.D.	2018			
		AIHC&A-303B	Historiography and Historical Method	2018			
		AIHC&A-303C	Laboratory Methods in Scientific Archaeology	2018			√
		AIHC&A-303D	Temple Studies	2018			
		AIHC&A -304	Soft Skills in Archaeology	2018	√		√
		AIHC&A-305A	Outlines of Indian History	2018			
		AIHC&A-305B	Women in Indian History	2018			
		AIHC&A-401	History of Indian Art	2018			√
		AIHC&A-402	Numismatics	2018			√
		AIHC&A-403A	Museology	2018			√
		AIHC&A-403B	Historical Applications in Tourism	2018	√		
		AIHC&A-403C	Tour Guiding and Management	2018	√		
		AIHC&A-403D	Conservation of Cultural Property	2018			√
		AIHC&A-404	History of Science and Technology in Ancient India	2018			
		AIHC&A-405A	Introduction to Indian Archaeology	2018			
		AIHC&A-405B	History of Vijayanagara Empire	2018			
3	Area Studies Programme	SEAP 104	Ancient Indian History	2018	√		

	SEAP 203	Regional Geography of South Pacific and East Asia	2018			√
MA Tourism	T 102	Planning and Development of Tourism	2018	√		
4	Centre for Extension Studies					
5	Centre for Gandhian Studies					
6	Centre for Womens Studies	SVUWS 101	Women's Studies- concepts, Principals & Issues	2018	√	√
		SVUWS 102	Health and Nutritional perspectives of women	2018	√	√
		SVUWS 103	Entrepreneurship Management & Development	2018	√	√
		SVUWS 104	Computer Applications: MS-word, MS-Excel, MS-Power-point	2018	√	√
		SVUWS 105A	Gender, environment, climate change & livelihood	2018	√	√
		SVUWS 105B	Gender Society and Power relations	2018		√
		SVUWS 105C	Social Process and Behavioral Issues	2018	√	√
		SVUWS-106A	Human Values And Ethics –I	2018		√
				2018		
		SVUWS-106	Leadership values	2018	√	√
		SVUWS 201	Women & Development	2018	√	√
		SVUWS 202	Research Methodology & SPSS	2018	√	√
		SVUWS 203	Sales and Marketing Management with focus on Gender perceptions	2018	√	√
		SVUWS 204	Skills Development Training – C Language, DBMS, Communication & Soft Skills	2018	√	√
		SVUWS 205A	Capacity building and leadership Training	2018	√	√
		SVUWS 205B	Gender & Media	2018	√	√
		SVUWS 205C	Social Work initiatives for women's Development	2018	√	√
		SVUWS-206A	6 a. Human values & Professional Ethics –II	2018		√
		SVUWS-206B	6 b. Familial values and Ethics	2018		√
		SVUWS 301	Gender, Science & Technology	2018	√	√
		SVUWS 302	C++ & E-Commerce	2018	√	√
		SVUWS 303	Human Resource planning & Development With focus on Gender Perceptions	2018	√	√
		SVUWS-304A	NGO Management	2018	√	√
		SVUWS-304B	Guidance & Counseling With Gender Perceptions.	2018	√	√
				2018		
		SVUWS-304C	Feminist theories , Women's, Status & Empowerment.	2018		√
				2018		
		SVUWS-304D	Women's participation in Agriculture& Allied sectors	2018	√	√
		SVUWS-305A	Gender Sensitization & Training	2018	√	√
		SVUWS-305B	Gender Identity and Leadership	2018	√	√
				2018		
		SVUWS-305C	Women and Governance	2018	√	√
		SVUWS 401	Documentation & Project Work with Gender perception	2018		√
				2018		
		SVUWS 402	Accounting & Financial Management, Tally	2018	√	√

		SVUWS 403	Participatory learning, Extension & outreach programs & Advocacy with focus on women	2018	√		√
		SVUWS 404A	Legal and Human Rights of Women	2018	√		√
		SVUWS 404B	Human Resource Management With focus on Gender Perceptions	2018	√	√	√
		SVUWS 404C	Multimedia systems	2018	√	√	√
		SVUWS 404D	Reproductive Health and Family Life Education	2018	√		√
		SVUWS 405A	Technical communication and computer ethics	2018	√	√	√
		SVUWS 405B	Gender & Mass Communication	2018	√	√	√
7	Econometrics	EMT 101	Microeconomic Theory I	2018			
		EMT 102	Macroeconomic Theory I	2018			
		EMT 103	Mathematical Methods	2018	√		√
		EMT 104	Practical I	2018			
		EMT 105	Statistical Methods	2018	√	√	
		EMT 106	Human Values and Professional Ethics – I	2018			
		EMT 201	Microeconomic Theory II	2018			
		EMT 202	Macroeconomic Theory II	2018			
		EMT 203	Basic Econometrics	2018	√		
		EMT 204	Practical II	2018			
		EMT 205	Mathematical Economics	2018	√		
		EMT 206	Human Values and Professional Ethics II	2018			
		EMT 301	Indian Economy	2018			
		EMT 302	Economics of Insurance	2018	√		
		EMT 303	Advanced Econometrics	2018			
		EMT 304	Computer Applications and Data	2018	√		√
		EMT 308	Introduction to Econometrics	2018	√		
		EMT 309	Indian Economy	2018			
		EMT 310	Economics of Insurance	2018	√		
		EMT 401	International Trade and Finance	2018			
		EMT 402	Environmental Economics	2018			
		EMT 403	Applied Econometrics	2018		√	
			Practical IV	2018			
		EMT 406	Environmental Economics	2018	√		
		EMT 407	Project	2018			
			Optimization Techniques in	2018	√		√
		EMT 408	Economics	2018			
		EMT 409	Data Base for the Indian Economy	2018			√
		EMT 410	Actuarial Statistics	2018			
8	Economics	101	Micro-Economic Analysis – I	2018			
		102	Macro-Economic Analysis - I	2018			
		103	Public Economics	2018			
		104	Mathematical Methods in Economics	2018			
				2018	√	√	
		105	Fundamentals of Computers	2018			

106	Human Values and Professional Ethics - I	2018			
201	Micro-Economic Analysis – II	2018			
202	Macro-Economic Analysis - II	2018			
203	Federal Finance	2018			
204	International Trade: Theory and Policy	2018			
205	Statistical Methods in Economics	2018	√		√
206	Human Values and Professional Ethics - II	2018			
301	Economics of Growth and Development	2018			
302	Indian Economy	2018			
303	Economics of Environment	2018	√		
304(a).	International Finance	2018			
304(b).	Agricultural Economics	2018			
304(c).	Demography	2018	√		
304(d)	Human Resource Development	2018	√		
305(a).	Urban Economics	2018	√		
305(b).	Economics of Infrastructure	2018			
305(c).	Economics of Insurance	2018			
401	Rural Development	2018			
402	Financial Institutions and Markets	2018	√		
403	Industrial Economics	2018			
404(a)	India's Economic Reforms	2018			
404(b).	Andhra Pradesh Economy	2018			
404(c).	Entrepreneurship and Skill Development	2018	√		√
404(d).	Labour Economics	2018			
405(a).	Women and Economic Development	2018			
405(b).	Economics of Tourism	2018	√	√	
405(c).	Tribal Economy	2018			
9 Education					
101	Perspectives of Educational Psychology	2018	✓	---	✓
102	Educational Studies	2018	✓		✓
103	Fundamentals of Educational Research	2018	✓	✓	✓
104	Teacher Education	2018	✓	✓	✓
105	Foundations of Educational Philosophy	2018	✓		✓
106	Measurement and Evaluation	2018	✓	✓	✓
201	Educational Planning and Management	2018	✓		✓
202	Advanced Educational Research	2018	✓	✓	✓
203	Guidance and Counseling	2018	✓	✓	✓
204	Issues and Research in Teacher Education	2018	✓		✓
205	Foundations of Educational Sociology	2018	✓		✓
206	Secondary Education	2018	✓		✓
301	Information and Communication Technology in Education	2018	✓	✓	✓
302	Comparative Education	2018	✓		✓
303	Inclusive Education	2018	✓	✓	✓
304-C	Environmental Education	2018	✓		✓
304-D	Life Skills Education	2018	✓	✓	✓

		305-A	Teaching Strategies for Teachers	2018	✓	✓	✓
		401	Advanced Educational Technology	2018	✓		✓
		402	Psychology – Learner and Life	2018	✓	✓	✓
		403	Environmental Concerns in Secondary Education	2018	✓		✓
		404-A	Human Values and Professional Ethics	2018	✓	✓	✓
		404-B	Lifelong Education	2018	✓		✓
		405-A	Personality Development and Soft Skills	2018	✓	✓	✓
10	English	105	English Language	2018	✓		
		205	English Language Teaching	2018	✓		✓
		305 D	Indian Literature in English	2018	✓		✓
		305 (A)	Communicative English	2018			✓
		305(B):	English for Media	2018	✓		✓
		305(C):	An Introductory Course to Literature	2018	✓		
		404(A):	Translation: Theory and Practice	2018	✓		
		405(A)	Soft Skills	2018	✓		✓
11	Foreign Languages and Linguistics			2018	✓	✓	✓
		LING-101	Language and Linguistics	2018		✓	
		LING-102	Phonetics	2018		✓	
		LING-103	Phonology	2018		✓	
		LING-104	Morphology	2018		✓	
		LING-105	Syntax	2018	✓	✓	✓
		LING-106	Human Values and Professional Ethics-I	2018		✓	
		LING-201	Semantics	2018		✓	
		LING-203	Dialectology	2018	✓	✓	✓
		LING-204	Field Linguistics	2018		✓	
		LING-205	Language families of India and Comparative Dravidian(Phonology)	2018	✓	✓	✓
		LING-206	Human Values Professional Ethics-II	2018	✓	✓	
		LING-301	Sociolinguistics	2018	✓	✓	
		LING-302	Language Contact	2018	✓	✓	✓
		LING-303	Communication Disorders and Speech Pathology	2018	✓	✓	✓
		LING-304A	Psycho-linguistics	2018	✓	✓	✓
		LING-304B	Communication Technology	2018			
		LING-304C	Endangered Languages	2018	✓	✓	✓
		LING-304D	Computational Linguistics	2018	✓	✓	✓
		LING-304E	Applied Linguistics	2018	✓	✓	✓
		LING-305B	Bilingualism	2018	✓	✓	✓
		LING-305C	Structure of English	2018	✓	✓	✓
		LING-401	Language Acquisition and Child Language Development	2018	✓	✓	✓
		LING-404B	Language Teaching	2018	✓	✓	✓
		LING-404C	Translation	2018	✓	✓	
		LING-405A	Branches of Linguistics	2018	✓	✓	✓
		LING-405C	Mass Media Communication	2018	✓		

12	Hindi	HIN-101	Aadhunik Hindi Kavita	2018			
		HIN-102	Hindi Gadhya Sahitya	2018			
		HIN-103	Bhasha Vignan	2018	√		
		HIN-104	Anuvad Vignan aur Paribhashik Shabdavali	2018	√		
		HIN-105	Hindi Sahitya Ka Ithihas	2018			
		HIN-106	Human Values & Professional Ethics-	2018			
		HIN-201	Samkaleen Hindi Kavita	2018			
		HIN-202	Hindi Ka Vaicharik Sahitya	2018			
		HIN-203	Hindi Bhasha	2018			
		HIN-204	Prayojanmulak Hindi	2018	√		√
		HIN-205	Aadhunik Hindi Sahitya Ka Ithihas	2018			
		HIN-303 D	Pravasi Sahitya	2018	√		
		HIN-304	Bhasha Shikshan ke Sidhantaaur Prayog	2018	√		
		HIN-305 A	Vyavharik Hindi Vyakaran	2018	√		
		HIN-305 B	Hindi Sahitya ke Nirmata	2018			
		HIN-401	Bhartiya Tulnatmak Sahitya	2018	√		
		HIN-402	Paschatya Samiksha Shastra	2018			√
		HIN-403 A	Anudit Bhartiya Sahitya	2018			√
		HIN-403 B	Asmitamulak Sahitya Vimarsha	2018			
		HIN-403 C	Sahitya ka Tulnatmak Adhayayan	2018	√		√
		HIN-403 D	Anusandhan ke Sidhanta aur Dristiya	2018			√
		HIN-404	Antar Jananushasnatmak Dristiyaaur And Pravidhiya	2018			
		HIN-405 A	Manak Hindi aur Nagrilipi	2018			√
		HIN-405 B	Aadhunik Hindi Sahitya ke Nirmata	2018			
13	History	HST -101	Historical Method and Concepts	2018			
		HST 102	History of Modern World, C.1900-1945	2018			
		HST 103	History of India Up to AD 650	2018			
		HST 104	History of Indian Polity and Economy, 1206-1757	2018	✓		
		HST 105	Political History of India, 1757-1857	2018			
		HST 106	Human Values and Professional Ethics- I	2018			
		HST 201	Historiography	2018			
		HST 202	History of Contemporary World, C.1945-2000	2018	✓		
		HST 203	History of India, AD 650-1206	2018			
		HST 204	Social and Cultural History of India, 1206-1757	2018	✓		
		HST 205	Social and Economic History of India, 1757-1857	2018			
		HST 206	Human Values and Professional Ethics-II	2018			
		HST 301	History of South Indian,1323-1724	2018			
		HST 302	Contemporary History of India-I	2018	✓		
		HST 303	History of USA, 1776- 1965	2018			
		HST 304 a	History of Andhra, 1766- 1857	2018			
		HST 304 b	Theoretical Concepts of Tourism	2018	✓		
		HST 304 c	Women Studies in Modern India	2018			
		HST 304 d	History of World Civilizations-I	2018	✓		

	HST 305 a	Indian Foreign Policy: An Introduction	2018	✓		
	HST 305 b	Constitutional History of India, 1773- 1950	2018	✓		
	HST 401	Freedom Movement in India, 1857 – 1947	2018	✓		
	HST 402	Contemporary History of India- II	2018			
	HST 403	History of USA,1865-1963	2018	✓		
	HST 404 a	History of Andhra, 1857 - 1972	2018			
	HST 404 b	Historical Application of Tourism in India	2018	✓		
	HST 404 c	Environmental History of Modern India	2018			
	HST 404 d	History of World Civilizations -II	2018			
	HST 405 a	International Relations and Organizations	2018	✓		
	HST 405 b	An Introduction to Indian Art	2018			
14	Human Rights and Social Development					
	HR – 101	HUMAN RIGHTS: CONCEPTS AND THEORETICAL PERSPECTIVES	2018			
	HR – 102	HUMAN RIGHTS IN INDIA THE CONSTITUTIONAL AND LEGAL FRAMEWORK	2018	✓		
	HR – 103	HUMAN RIGHTS AND THE IMPLEMENTATION MACHINERY	2018	✓		✓
	HR – 104	RIGHTS AND THE IMPLEMENTATION MACHINERY	2018			
	HR – 105 (A)	WORKING CLASS AND HUMAN RIGHTS AND DUTIES	2018	✓		
	HR – 105 (B)	HUMAN RIGHTS EDUCATION, TEACHING AND TRAINING	2018	✓		✓
	HR – 106 (A)	HUMAN RIGHTS ACTIVISM AND ROLE OF NGOs	2018	✓		✓
	HR – 106 (B)	SOCIAL MOVEMENTS AND HUMAN RIGHTS IN INDIA	2018	✓		
	HR - 107	HUMAN MOVEMENTS AND HUMAN RIGHTS IN INDIA	2018			
	HR – 201	HUMAN RIGHTS AND INDIAN POLITY	2018			
	HR – 202	EMERGING DIMENSIONS OF HUMAN RIGHTS	2018			
	HR – 203	HUMAN RIGHTS : THE INTERNATIONAL CONTEXT	2018	✓		
	HR – 204	RESEARCH METHODOLOGY, STATISTICS AND COMPUTER	2018	✓		✓
	HR – 205 (A)	HUMAN RIGHTS – THE SOCIO ECONOMIC CONTEXT	2018			
	HR – 205 (B)	SOCIETAL PROBLEMS OF HUMAN RIGHTS IN INDIA	2018			
	HR – 206 (A)	HUMAN RIGHTS AND CRIMINAL JUSTICE SYSTEM	2018	✓		✓
	HR – 206 (B)	MEDIA AND HUMAN RIGHTS	2018	✓		✓
	HR – 301	SOCIAL MOVEMENTS AND HUMAN RIGHTS AND DUTIES	2018			
	HR – 302	SCIENCE, TECHNOLOGY, HUMAN RIGHTS AND DUTIES	2018	✓		
	HR – 303 (A)	HUMAN RIGHTS AND DUTIES – ADVOCACY AND EXTENSION WORK AND VIVA – VOCE	2018	✓		
	HR – 303 (B)	SOCIALLY / ECONOMICALLY DISADVANTAGED PEOPLE AND HUMAN RIGHTS AND DUTIES	2018			
	HR – 303 (C)	HUMAN DUTIES AND RESPONSIBILITIES	2018			
	HR – 303 (D)	CHILDREN AND HUMAN RIGHTS AND DUTIES	2018			
	HR – 304	SOFT SKILLS	2018	✓		✓

		HR – 305 (A)	HISTORICAL AND PHILOSOPHICAL PERSPECTIVES AND HUMAN RIGHTS	2018			
		HR – 305 (B)	HUMAN RIGHTS AND DUTIES IN INDIA	2018	✓		
		HR – 401	human rights in andhra pradesh	2018			
		HR – 402	development, trade and human rights	2018			
		HR – 403 (A)	international, humanitarian and refugee laws	2018			
		HR – 403 (B)	environment and human rights and duties	2018	✓		
		HR – 403 (C)	human rights and criminal justice system	2018			
				2018			
15	Law	LAW-101	Mass Media Law	2018	✓	✓	✓
		LAW-102	Public Utilities Law	2018		✓	✓
		LAW103	Law and Social Transformation in India	2018	✓	✓	✓
		LAW-104	Indian Constitutional Law, The New Challenges.	2018	✓	✓	✓
		LAW-201	Union State Finance Relations	2018	✓	✓	✓
		LAW-202	Constitutionalism, Pluralism and Federalism	2018	✓	✓	✓
		LAW-203	Judicial Process	2018	✓	✓	✓
		LAW-204	Legal Education and Research Methodology	2018	✓	✓	✓
		LAW-301	Human Rights	2018	✓	✓	✓
		LAW-302	National Security, Public Order and Rule of Law	2018	✓	✓	✓
		LAW-303	Practical Training	2018	✓	✓	✓
		LAW-304 a	Environment Protection and the Law	2018	✓	✓	✓
		LAW-304b	Intellectual Property Rights Law	2018	✓	✓	✓
		LAW-305 a	Cyber Crimes and Law	2018	✓	✓	✓
		LAW305 b	Evolution and Concept of ADR	2018	✓	✓	✓
		LAW401	Dissertation and Viva- Voce	2018	✓	✓	✓
		LAW-402 a	Law and Consumer Protection	2018	✓	✓	✓
		LAW -402 b	International Human Rights (MOOC/Online)	2018	✓	✓	✓
				2018			
16	Library and Information Science	Lis-101	Foundation of Library and Information Science	2018			✓
		Lis-102	Knowledge Organization : Classification Theory	2018	✓		✓
		Lis-103	Knowledge Organization : Classification Practice	2018	✓		✓
		Lis-104	Knowledge Management	2018		✓	✓
				2018			
		Lis-105	Introduction to Information Technology	2018	✓		✓
		Lis-106	Human Values and Professional Ethics – I	2018			✓
		Lis-201	Information Sources and Services	2018			✓
		Lis-202	Knowledge Organization : Cataloguing Theory	2018	✓		✓
		Lis-203	Knowledge Organization : Cataloguing Practice	2018	✓		✓
		Lis-204	Meta Data Standards – Practice	2018	✓		✓
		Lis-205	Library Management	2018	✓		✓
		Lis-206	Human Values and Professional Ethics – II	2018			✓
		Lis-301	Information Processing and Retrieval Theory	2018	✓		✓
		Lis-302	Library Automation and Digital Library	2018	✓		✓
		Lis-303	Search and search strategies	2018			✓
				2018			
		Lis-304A		2018			

			User Studies	2018			
		Lis-304B		2018	✓		✓
			Internship	2018			
		Lis-304C		2018	✓		✓
			Academic Library System	2018			
		Lis-304D	Special Library System	2018	✓		✓
		Lis-305A	Information Literacy	2018			✓
		Lis-305B	Information and Communication	2018			✓
		Lis-401	Research Methodology	2018			✓
		Lis-402	Software for Libraries-Practice	2018	✓		✓
		Lis-403	Dessertation/Project Work	2018	✓		✓
		Lis-404A	Management of Information System	2018			✓
		Lis-404B	Museums and Archives	2018			
		Lis-404C	Information Processing and Retrieval:UDC and Indexing Practice	2018	✓		✓
		Lis-404 D	Marketing of Information Products and Services	2018			✓
		Lis-405 A	Information Systems and Programmes	2018			✓
		Lis-405B	Technical Writing	2018			✓
17	Mass Communication & Journalism						
18	Performing Arts						
		PAM-105 (P)	Compulsory Foundation in Music -1	2018			✓
		PAM-105 (P)	Compulsory Foundation in Music -1	2018			✓
		PA-M 204 (P)	Vilambakala Kritis	2018	✓		✓
							✓
		PA-M 205 (p)	Compulsory Foundation in Music -2	2018			
		PA-M 302	Compositions in Rare ragas	2018	✓		✓
		PA-M 303	Concert	2018	✓	✓	✓
		PA-M 402	Ragam Tanam Pallavi	2018	✓		✓
		PA-M 403	Project work	2018	✓		✓
		PA-M 404A	Manodharma Sangeetha	2018	✓		✓
		PA-M 404C	Compositions of Dance Repertoire	2018	✓	✓	✓
				2018			
19	Philosophy						
		PHL- 101	Logic: Indian and Western	2018			✓
		PHL -102	Epistemology – Indian	2018			
		PHL -103	Classical Indian Philosophy	2018	✓		✓
		PHL -104	Problems in Metaphysics	2018			
		PHL -105	Western Philosophy: Greek and Medieval	2018			
		PHL -106	Human Values and Professional Ethics -I	2018			
		PHL- 201	Ethics – Indian	2018	✓		
		PHL- 202	Ethics – Western	2018	✓		
		PHL- 203 - A	Modern Indian Thought	2018			
		PHL- 203 - B	Modern Western Philosophy	2018			
		PHL- 203 - C	Nyaya Sutras	2018			✓
		PHL- 204	Philosophy of Education	2018			
		PHL- 205	Human Values and Professional Ethics -II	2018			

	PHL- 301	Social and Political Philosophy	2018	✓		✓
	PHL- 302	Analytical Philosophy	2018	✓		
	PHL- 303	Philosophy of Vedanta	2018	✓		
	PHL- 304 - A	Philosophical Approach to Gandhi	2018			
	PHL- 304 - B	Philosophy of B.R Ambedkar	2018	✓		
	PHL- 304 - C	Philosophy of Religion	2018			
	PHL- 305- A	Philosophy of Yoga	2018		✓	✓
	PHL- 305- B	Eco - Philosophy	2018			✓
	PHL- 401	Phenomenology and Existentialism	2018			✓
	PHL- 402	Comparative Religion	2018			✓
	PHL- 403	Sri Vaishnavism	2018			
	PHL- 404 - A	Philosophy of Peace	2018	✓		✓
	PHL- 404 - B	Research Methodology and	2018	✓		✓
		Computer Applications	2018			
	PHL- 404 - C	Introduction to Philosophy of Mind	2018			
	PHL- 405 - A	Sri Venkateswara Studies	2018			
	PHL- 405 - B	Philosophy of Value Education	2018	✓		
20	Physical Education					
	CC-101	History, Principles and foundations of Physical Education	2018			
	CC-102	Anatomy and Physiology	2018			
	CC-103	Educational Technology and Methods of Teaching in Physical Education	2018		✓	✓
	EC-111	Communication & Soft skills	2018			
	EC-112	Olympic Movement	2018			✓
		Track and Field (Running Events), *Gymnastics/*Swimming	2018			✓
	PC-121	(* Any one)				
	PC-122	Football, Tennis, Throwball	2018		✓	✓
	PC-123	Badminton, Kho-Kho, Shooting	2018		✓	✓
		Mass Demonstration Activities:	2018			
		Flag Hoisting, March past,				
		Calisthenics, Lezium				
		Dumb-bells, Kolatam, Aerobics				
	PC-124	Wands, Hoops, Pole Drill, Folk Songs & Patriotic Songs				
	CC-201	Kinesiology and Biomechanics	2018		✓	✓
	CC-202	Health Education and Environmental Studies	2018			✓
	CC-203	Measurement and Evaluation in Physical Education	2018			✓
	EC-211	Computer Applications in Physical Education	2018			
	EC-212	Recreation and Leisure Management	2018			
		Track and Field	2018			
		(Jumping Events)				
		* Gymnastics/*Swimming				✓
	PC-221	(* Any one)				✓
	PC-222	Yoga, Ball Badminton, Kabaddi	2018			✓
	PC-223	Hockey, Handball, Cricket	2018			✓
		Teaching Practice	2018			✓
		(Class room and Outdoor)				

		TP-231	(4 internal and 1 External in class room and outdoor)				
21	Political Science & Public Administration						
		PSPA 101	Constitution Making - Indian Experience	2018	✓	✓	✓
		PSPA 105 (b)	Indian Political Thought	2018	✓	✓	
		PSPA 103	Modern Political Analysis	2018	✓	✓	✓
		PSPA105 (c)	Public Relations& Mass Communication	2018	✓	✓	✓
		PSPA106 (a)	Dynamics of Public Administration	2018	✓	✓	✓
		PSPA106 (b)	Globalization and Indian Political Economy	2018	✓	✓	✓
		PSPA 201	Administrative Theories	2018		✓	✓
		PSPA 202	Research Methodology	2018	✓	✓	✓
		PSPA 203	Indian Government and Politics	2018	✓	✓	✓
		PSPA 204	Public Policy	2018	✓	✓	✓
		PSPA205 (a)	Indian National Movement	2018	✓	✓	✓
		PSPA205 (b)	Public Enterprises in India	2018	✓	✓	✓
		PSPA 205 (c)	Administrative Techniques	2018	✓	✓	✓
		PSPA 206 (b)	International Administration	2018	✓		✓
		PS303(a)	Good Governance and Information Technology	2018	✓	✓	✓
		PS 304	Personality Development and Employment	2018	✓	✓	✓
		PS305(a)	Social Movements in India	2018	✓		
		PA 301	Public Personnel Administration	2018	✓		✓
		PA303(b)	Issues in Indian Administration	2018	✓		✓
		PA303(d)	Political Dynamics	2018		✓	✓
		PA 305(b)	Indian Polity and Governance	2018	✓	✓	✓
			India's Foreign Policy-Continuity,	2018	✓		✓
		PS 401	Changes and Emerging Challenges	2018			
		PS 402	Center-State Relations in India	2018	✓		✓
		PS 403(b)	E-Governance	2018	✓	✓	✓
		PS 405(b)	Women and Politics	2018	✓	✓	✓
		PA 401	Human Resource Management	2018	✓	✓	✓
		PA 402	Financial Administration	2018	✓	✓	✓
		PA 403(c)	Disaster Management	2018	✓	✓	✓
		PA 403(d)	Office Management	2018	✓	✓	✓
		PA 405(a)	Indian Constitution	2018	✓		
		PA 405(b)	Banking Management	2018	✓	✓	✓
22	Population Studies						
		PSC-101	Population Characteristics and Theories	2018	✓	--	✓
		PSC-102	Fertility	2018	✓	--	✓
		PSC-103	Mortality	2018	✓	--	✓
		PSC-104	Sources, Evaluation and Adjustment of Data	2018	✓	✓	✓
		PSC-105	Population Education and Extension	2018	✓	--	✓
		PSC-106	Human Values & Professional Ethics-I	2018	--	--	✓
		PSC - 201	Migration and Multi Regional Demography	2018	--	--	✓
		PSC - 202	N.G.O Management	2018	✓	✓	✓
		PSC - 203	Statistical Methods	2018	✓	✓	✓
		PSC - 204	Population Sociology	2018	✓	--	✓
		PSC – 205	Population and Sustainable Development	2018	✓	--	✓

		PSC - 206	Human Values and Professional Ethics -II	2018	--	--	✓
		PSC - 301	Population Geography	2018	✓	✓	✓
		PSC - 302	Research Methodology	2018	✓	✓	✓
		PSC - 303	Community Health	2018	✓	--	✓
		PSC – 304 A	Population Psychology	2018	✓	--	✓
		PSC – 304 B	Population Policies and Programmes	2018	✓	--	✓
		PSC – 304 C	Georontology	2018	✓	✓	✓
		PSC – 304 D	Population and Sustainable Developemnt	2018	✓	--	--
		PSC – 305 A	Principles of Population Studies	2018	✓	--	--
		PSC – 305 B	Population, Society and Environment	2018	✓	--	✓
		PSC - 401	Communication For Family Welfare Programmes	2018	✓	--	✓
		PSC - 402	Reproductive Health and Adolescent Issues	2018	✓	--	✓
		PSC - 403	Population Growth and Development	2018	✓	--	--
		PSC – 404 A	Field Work Practice and Dissertation	2018	✓	✓	✓
		PSC – 404 B	Demography of Andhra Pradesh	2018	✓	--	--
		PSC – 404 C	Social Work in Industry and Human Resource Management	2018	✓	--	✓
		PSC – 404 D	Health Economics	2018	✓	--	✓
		PSC – 405 A	Rural, Urban, Tribal Development	2018	✓	--	✓
		PSC – 405 B	Social policies and planning	2018	✓	--	✓
	Social Work	MSW-101	Sociology for Social Work	2018	✓	--	--
		MSW-102	Human growth and Personality Development	2018	✓	--	✓
		MSW-103	Social Work Profession & Field Work Orientation-1	2018	✓	✓	✓
		MSW-104	Social Work practice with Individuals & Groups	2018	✓	--	✓
		MSW-105	Social Work Practicum-I	2018	--	--	✓
		MSW-106	Human Values & Professional Ethics-I	2018	--	--	✓
		MSW - 201	Social Work Profession and Field Work Orientation-II	2018	✓	✓	✓
		MSW - 202	Social Work Practice with Communities	2018	✓	✓	✓
		MSW - 203	Social Action and Social Legislation for Social Work Practice	2018	✓	--	✓
		MSW - 204	Social Policy and Planning	2018	✓	--	✓
		MSW – 205	Social Work Practicum-II	2018	--	--	✓
		MSW - 206	Human Values and Professional Ethics -II	2018	--	--	✓
		MSW - 301	Social Work Intervention With Families	2018	✓	--	✓
		MSW - 302	Social Work in the Field of Health	2018	✓	--	✓
		MSW - 303	Counseling in Social Work Practice	2018	✓	✓	✓
		MSW - 304 A	Social work Research	2018	✓	✓	✓
		MSW – 304 B	Gerontological Social Work	2018	✓	✓	✓
		MSW – 304 C	Social Work Practicum-III	2018	--	--	✓
		MSW – 304 D	Human Rights and Social Legislation	2018	✓	✓	✓
		MSW – 305 A	Principles of Population Studies	2018	✓	--	✓
		MSW – 305 B	Fundamentals of Social Work	2018	✓	✓	✓
		MSW - 401	Social Work Intervention With Children	2018	✓	--	✓
		MSW - 402	Rural/Urban/Tribal Development & Empowerment –I	2018	✓	--	✓
		MSW - 403	Social Work in the Field of Mental Health	2018	✓	--	✓
		MSW – 404 A	Social Work in Industry & Human Resource Management	2018	✓	--	✓
		MSW – 404 B	Social Work Practicum-IV	2018	--	--	✓
		MSW – 404 C	Social Work Practicum-V	2018	--	--	✓
		MSW – 404 D	Social Work and Disaster Management	2018	✓	--	✓
		MSW – 405 A	Rural, Urban, Tribal Development	2018	✓	--	✓

		MSW – 405 B	Social policies and planning	2018	✓	--	✓
23	Sanskrit	SNSKT 101	Elements of Darsanas-I	2018			
		SNSKT 102	Vedic Texts-I	2018	✓		
		SNSKT 103	Prose And Poetry –I	2018			
		SNSKT 104	Drama, Alankara and Prosody-I	2018			
		SNSKT 105	History of Sanskrit Literature-I	2018			
		SNSKT 106	Human Values and Professional Ethics-I	2018			
		SNSKT 201	Elements of Darsanas-II	2018	✓		
		SNSKT 202	Vedic Texts-II	2018	✓		
		SNSKT 203	Prose And Poetry –II	2018			
		SNSKT 204	Drama, Alankara and Prosody-II	2018			
		SNSKT 205	History of Sanskrit Literature-II	2018			
		SNSKT 206	Human Values and Professional Ethics-II	2018			
		SNSKT 301	(Sahitya)-Rasagangadhara-I	2018			
		SNSKT 302	(Sahitya)-Dhvanyaloka-I	2018			
		SNSKT 303	(Sahitya)-KavyaPrakasa of Mammata and Dasarupaka-I	2018			
		SNSKT 304(A)	Comparative Philology And Siddhanta Kaumudi-I	2018			
		SNSKT 304(B)	History of Sanskrit Poetics And Sanskrit Essay	2018			
		SNSKT 304©	Natyasastram	2018	✓		✓
		SNSKT 401	(Sahitya)-Rasagangadhara-II	2018			
		SNSKT 402	(Sahitya)-Dhvanyaloka-II	2018			
		SNSKT 403	(Sahitya)-KavyaPrakasa of Mammata and Dasarupaka-II	2018	✓		
		SNSKT 404(A)	Comparative Philology And SiddhantaKaumudi-II	2018			
		SNSKT 404(B)	History of Sanskrit Poetics And Sanskrit Essay	2018			
		SNSKT 404(C)	Kavyadarsah	2018			
24	Sociology	MASO-102	Sociological Research methods	2018	✓	✓	
		MASO-104	Participatory Research	2018	✓	✓	
		MASO-201	Applied Sociology	2018	✓	✓	
		MASO-203	Rural Sociology and Development	2018	✓	✓	
		MASO-204	Extension Work	2018	✓	✓	
		MASO-205	Environmental Sociology	2018	✓	✓	
		MASO-301	Medical Sociology	2018	✓	✓	
		MASO-303	Field Work and Extention Work (Village Placement)	2018	✓	✓	
		MASO-304-A	Human Rights	2018	✓	✓	
		MASO-304-C	Gerontology	2018	✓	✓	
		MASO-305-A	Social Psychology and Personality Development	2018	✓	✓	
		MASO-401	Criminology	2018	✓	✓	
		MASO-402	Industrial Dynamics	2018	✓	✓	
		MASO-403	Field Work	2018	✓	✓	
		MASO-404-A	Social Welfare and Welfare Administration	2018	✓	✓	
		MASO-405	Globalisation and Educational Pursuits	2018	✓	✓	
25	Tamil	TML 101	Modern Literature	2018	✓		
		TML 104	Principle of Literary Criticism - I	2018	✓		
		TML 201	Modern Literature - II	2018	✓		
		TML 204 A	Feminism	2018	✓		

		TML 303	General Linguistics	2018	✓		
		TML 304D	Folk Arts in Tamil	2018			✓
		TML 403	Comparative grammar of Dravidian Languages and History of Tamil Language	2018	✓		
		TML 404D	Folk Festivals	2018			✓
26	Telugu Studies	102	General Linguistics	2018	✓		
		105	Folk Literature	2018	✓		✓
		303	Journalism	2018	✓		
		304A	Fiction: Novel & Short Stories	2018			
		305b	Adhunika Moulikamsalu	2018	✓		
		202	Dialectology	2018			✓
		205	Folk Arts	2018			✓
		404d	Comparative Literature	2018	✓		
		405a	Folk Lore	2018	✓		✓
27	Urdu	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2018	✓		✓
		URD 304 D	Urdu Computer	2018	✓	✓	✓
		URD 404 A	Urdu Tarjuma Nigari	2018	✓		✓
		URD 404 D	Urdu Tarseel o Iblag ke Zaraye	2018	✓		✓
			SVU COLLEGE OF SCIENCES				
28	Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2018	✓		✓
		ANO : 102	Introduction to Biological Anthropology	2018	✓		✓
		ANO-103	Introduction to Archaeological Anthropology	2018	✓		✓
		ANO-104P	Somatometry & Somatoscopy	2018	✓		✓
		ANO 105p	Archaeological Anthropology	2018	✓		✓
		ANO 106	Economic and Political Anthropology	2018	✓		✓
		ANO 107	Human Values and Professional Ethics -I	2018	✓		✓
		ANO 201	Comparative Ethnography and Indian Anthropology	2018	✓		✓
		ANO 202	Principals of Genetics	2018	✓		✓
		ANO 203	Research Methods in Anthropology	2018	✓		✓
		ANO 204P	Craniology and Craniometry	2018	✓		✓
		ANO205P	Doing Ethnography	2018	✓		✓
		ANO206	Prehistoric India	2018	✓		✓
		ANO 207	Human Values and Professional Ethics -II	2018	✓		✓
		ANB 301	Human Evolution and Fossil Evidence	2018	✓		✓
		ANB 302	Human Genetics	2018	✓		✓
		ANB 303P	Human Osteology and Osteometry	2018	✓		✓
		ANB 304P	Dermatoglyphics	2018	✓		✓
		ANB 305	Anthropological Demography	2018	✓		✓
		ANB 306	Biostatistics and Computer Applications	2018	✓	✓	✓
		ANB 307	Forensic Anthropology	2018	✓	✓	✓
		ANB 308	Palaeoanthropology	2018	✓		✓
		ANB 401	Biological Anthropology	2018	✓		✓
		ANB-402	Human Population Genetics	2018	✓		✓

ANB-403P	Advanced Biological Anthropology	2018	✓		✓
ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2018	✓		✓
ANB -405	Human Growth, Physique and Nutrition	2018	✓		✓
ANB 406	Applied Biological Anthropology	2018	✓	✓	✓
ANB 407	Medical Genetics	2018	✓	✓	✓
ANB-408	Epidemiology	2018	✓	✓	✓
ANB -409	Applied Anthropology	2018	✓		✓
ANS 301	Theories of Culture	2018	✓		✓
ANS 302	Social Anthropology of Complex Societies	2018	✓		✓
ANS 303P	Participatory of Research methods in Development Process	2018	✓		✓
ANS 304P	Non-Governmental Organizations and Extension studies	2018	✓		✓
ANS 305	Ecological Anthropology	2018	✓		✓
ANS 306	Applied Anthropology- Indigenous Communities	2018	✓		✓
ANS 307	Anthropology of Religion Sacred complexes in India	2018	✓		✓
ANS 308	Anthropology and Career Promotion	2018	✓		✓
ANS 401	Structural Anthropology	2018	✓		✓
ANS-402	Medical Anthropology	2018	✓	✓	✓
ANS-403P	Computer Applications	2018	✓	✓	✓
ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2018	✓		✓
ANS -405	Developmental Anthropology	2018	✓		✓
ANS 406	Culture and Management	2018	✓		✓
ANS 407	Anthropology of Displaced Populations	2018	✓		✓
ANS-408	Visual Anthropology	2018	✓		✓
ANS -409	Environmental Anthropology	2018	✓		✓
29 Biochemistry					
101	Biochemical and Biophysical methods		✓	✓	✓
102	Molecular Physiology and community nutrition		✓	✓	
103P	Practical related to Biochemical analysis		✓	✓	✓
104P	Practical related to Analytical methods		✓	✓	✓
105	Cell and Biomolecules			✓	
106	Human values and Professional ethics-I		✓		
201	Energy metabolism			✓	
202	Metabolism of Nitrogen based molecules			✓	
203P	Practical related to Enzymology		✓	✓	✓
204P	Practical related to Molecular Biology		✓	✓	✓
205	Human Values and Professional Ethics-II		✓		
206	Enzymology		✓	✓	✓
301	Microbial Biochemistry and Genetics		✓	✓	✓
302	Molecular Biology		✓	✓	✓
303P	Practical related to Microbiology		✓	✓	✓
304P	Practical related to Clinical Biochemical Analysis		✓	✓	✓
305 Generic Elective	a) Molecular Endocrinology		✓	✓	
305 Generic Elective	b) Clinical Biochemistry		✓	✓	✓
305 Generic Elective	c) Cell and Developmental Biology			✓	
306 Open Elective to others	a) General Biochemistry		✓	✓	

306	Open Elective to others	b) Environmental Biochemistry		✓	✓	✓
306	Open Elective to others	c) Experimental aspects related to analytical methods		✓	✓	✓
401		Genetic Engineering		✓	✓	✓
402		Technical Writing, Biostatistics and Bioinformatics		✓	✓	✓
403P		Practical related to Immunology and Hematology		✓	✓	✓
404P:		Practical/Project work		✓	✓	✓
405GE		a) Immunology		✓		
405GE		b) Applied Biochemistry		✓	✓	✓
405GE		c) Plant Biochemistry		✓	✓	
406OE		a) Research Methodology		✓	✓	✓
406 OE		b) Biochemistry of diseases		✓	✓	✓
406 OE		c) Nutritional Biochemistry		✓	✓	✓
	Immuno-technology					
Core 1		Biochemical and Biophysical methods		✓	✓	✓
Core 2		Molecular Physiology and community nutrition		✓	✓	
Core 3		Practical related to Biochemical Preparations and Analysis		✓	✓	✓
Core 4		Practical related to Analytical methods		✓	✓	✓
CompulsoryFoundation		Cell and Biomolecules			✓	
Electivefoundation		Human Values and Professional Ethics-II		✓		
Core 1		Energy metabolism			✓	
Core 2		Metabolism of Nitrogen based molecules			✓	
Core 3		Practical related to Enzymology		✓	✓	✓
Core 4		Practical related to MolecularBiology		✓	✓	✓
CompulsoryFoundation		Enzymology		✓	✓	✓
Elective foundation		Human values and Professionalethics-II		✓		
Core 1		Microbial Biochemistry andGenetics		✓	✓	✓
Core 2		Immunology		✓		
Core 3		Practical related to Microbiology		✓	✓	✓
Core 4		Practical related to Immunology		✓	✓	✓
GenericElective		a) Molecular Biology		✓	✓	✓
GenericElective		b)MolecularEndocrinology		✓	✓	
Generic Elective		c) Cell and Developmental Biology			✓	
Open Elective		a) Basics of Immunology		✓		
Open Elective to		b) Immunotechniques		✓	✓	✓
Core 1		Genetic Engineering		✓	✓	✓
Core 2		Technical Writing, Biostatisticsand Bioinformatics		✓	✓	✓
Core 3		bioinformatics		✓	✓	✓
Core 4		Practical/Project work		✓	✓	✓
Generic Elective		a) Clinical Immunology		✓	✓	✓
Generic Elective		b) Applied and molecular immunology		✓	✓	✓
GenericElective		c) Immuno pharmacology		✓	✓	✓
Open Elective to others		a) Research Methodology		✓	✓	✓

		Open Elective to others	b) Immunological diseases and therapeutics		✓	✓	✓
30	Botany	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2018-2019	✓	---	✓
		BOT-102	Taxonomy of Angiosperms	2018-2019	✓	---	✓
		BOT-103	Microbiology	2018-2019	✓	---	✓
		BOT-104	Human Values and Professional Ethics - I	2018-2019	--	✓	--
			Practical-I				
		BOT-105P	Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2018-2019	✓	✓	✓
			Practical-II				
		BOT-106P	Microbiology & Plant Development and Reproduction	2018-2019	✓	✓	✓
		BOT-201	Plant Ecology	2018-2019	✓	--	✓
		BOT-202	Plant Biochemistry and Plant Physiology	2018-2019	✓	✓	✓
		BOT-203	Plant Development and Reproduction	2018-2019	✓	---	✓
		BOT-204	Human Values and Professional Ethics - II	2018-2019	---	---	✓
			Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation				
		BOT-205P		2018-2019	✓	✓	✓
			Practical-II				
		BOT-206P	Plant Ecology & Cell Biology, Genetics and Evolution	2018-2019	✓	✓	✓
		BOT-301	Molecular Biology and Techniques	2018-2019	✓	✓	✓
		BOT-302	Biodiversity and Conservation	2018-2019	✓	---	✓
		BOT-303IE	Biosystematics	2018-2019	✓	--	✓
		BOT-304 IE	Molecular Plant Pathology	2018-2019	✓	✓	✓
		BOT-306 IE	Computer Applications and Bioinformatics	2018-2019	✓	✓	✓
		BOT-307 EE	Plants and Human Welfare	2018-2019	✓	✓	✓
		BOT-308 EE	Organic Farming and Mushroom Cultivation	2018-2019	✓	✓	✓
		Bot-309 EE	Gardening and Nursery Techniques	2018-2019	✓	✓	✓
			Practical-I				
		BOT-305P	Conservation	2018-2019	✓	✓	✓
			Practical – II				

		BOT-306P	Biosystematics / Molecular Plant Pathology / Computer Applications	2018-2019	✓	✓	✓
		BOT-401	Molecular Genetics, Genomics and Proteomics	2018-2019	✓	--	--
		BOT-402	Plant Biotechnology	2018-2019	✓	✓	✓
		BOT-403IE	Molecular Plant Physiology	2018-2019	✓	✓	✓
		BOT-404IE	Horticulture and Agriculture Biology	2018-2019	✓	✓	✓
		BOT-405IE	Ethnobotany and Phytomedicine	2018-2019	✓	✓	✓
		Practical-I	Molecular Genetics, Genomics and Proteomics & Plant Biotechnology	2018-2019	✓	✓	✓
			Molecular Plant Physiology / Horticulture and Agriculture Biology / Ethnobotany & Phytomedicine		✓	✓	✓
		Practical -II		2018-2019			
31	Biotechnology	BTH 101	Structure and Functions of Biomolecules	2018	✓		
		BTH 102	Advanced Tools and Techniques	2018	✓		
		BTH 103P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2018	✓		✓
		BTH 104P	Practicals related to Microbiology and Immunology	2018	✓		✓
		BTH 105	Microbiology and Immunology	2018	✓		
		BTH 106	Human Values and Professional Ethics-I	2018			
		BTH 201	Enzymes and Intermediary Metabolism	2018	✓		
		BTH 202	Molecular Biology	2018	✓		
		BTH 203P	Practicals related to Enzymology & Molecular Biology	2018	✓		✓
		BTH 204P	Practicals related to Biostatistics and Bioinformatics	2018	✓		✓
		BTH 205	Research methodology, Biostatistics and Bioinformatics	2018	✓		
		BTH 206	Human Values and Professional Ethics-II	2018			
		BTH 301	Genetic Engineering	2018	✓		
		BTH 302	Cell and Tissue Culture	2018	✓		
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2018	✓		✓
		BTH 304	a) Bioprocess Engineering and Technology	2018	✓		✓
		BTH 304	b) Legal, Ethical and Implications of Biotechnology	2018	✓		
		BTH 304	c) Food and Industrial Biotechnology	2018	✓		✓
		BTH 305	a) Plant Tissue Culture	2018	✓		
		BTH 305	b) Bioethics	2018	✓		
		BTH 305	c) Bioinformatics	2018	✓		✓
		BTH 401	Environmental Biotechnology	2018	✓	✓	✓
		BTH 402	Plant Biotechnology	2018	✓		
		BTH 403	Project work	2018	✓		✓
			a) Pharmaceutical Biotechnology	2018	✓		
			b) Animal Biotechnology	2018	✓		

		c) Applications of Biotechnology	2018	✓		
	BTH 404	d) Practicals Related to Environmental Biotechnology & Plant Biotechnology	2018	✓		
	BTH 405	a) Tools in Biotechnology	2018	✓		
	BTH 405	b) Immunology	2018	✓		✓
	BTH 405	c) Applications of Biotechnology	2018	✓		
32	Chemistry	CHE 201	Inorganic Chemistry – II	2018	✓	
		CHE 202	Organic Chemistry – II	2018	✓	
		CHE 203	Physical Chemistry II	2018	✓	
		CHE IC 301	Inorganic Spectroscopy & Thermal Methods of Analysis	2018	✓	✓
		CHE OC 302	Organic Spectroscopy	2018	✓	✓
		CHE PC 301	Physical Chemistry – III	2018	✓	✓
		CHE OC 301	Organic Chemistry III	2018	✓	✓
		CHE AC 401	Quality Control and General Principles	2018	✓	✓
		CHE AC 403	Instrumental Methods of Analysis II	2018	✓	✓
		CHE OC 401	Organic Synthesis I	2018	✓	
		CHE OC 402	Organic Synthesis II	2018	✓	
		CHE OC 405A	Heterocycles and natural products	2018	✓	
		CHE 405 B	Bioinorganic, Bioorganic, Biophysical	2018	✓	✓
		CHE EC 401	Energy, environment & Soil	2018	✓	
		CHE EC 402	Water pollution Monitoring & environment laws	2018	✓	✓
		CHE OC 304	Multi Step Preparations	2018	✓	✓
		CHE AC 403	Instrumental Methods of Analysis – II	2018	✓	✓
		CHE OC 403	Spectral identification of organic compounds	2018	✓	✓
		CHE PC 403	Potentiometry, Polarography	2018	✓	✓
		CHE 404	Project Work	2018	✓	✓
33	Environmental Sciences	ENV-101	Ecology and Environment	2018	✓	-
		ENV -102	Environmental Chemistry	2018	✓	-
		ENV -103	Practical-I	2018	✓	✓
		ENV -104	Practical-II	2018	✓	✓
		ENV -105	Environmental Toxicology and Public Health	2018	✓	-
		ENV -106	Human Values and Professional Ethics – I	2018	-	-
		ENV-201	Energy and Environment	2018	✓	✓
		ENV-202	Environmental Pollution	2018	✓	-
		ENV-203	Practical-I	2018	✓	✓
		ENV-204	Practical-II	2018	✓	✓
		ENV-205	Instrumental Techniques and applications	2018	✓	✓
		ENV-206	Human Values and Professional Ethics – II	2018	-	-
		ENV-301	Waste Treatment and Management	2018	✓	✓
		ENV-302	Environmental Impact Assessment, Audit and Economics	2018	✓	✓
		ENV-303	Practical-I	2018	✓	✓
		ENV-304	Practical-II	2018	✓	✓
		ENV-305 A	Eco Tourism and Eco- restoration	2018	✓	✓

ENV-305 B	Biodiversity conservation and Management	2018	✓	-	✓
ENV-305 C	Statistics, Computer Applications and Modeling	2018	✓	-	✓
ENV-306 A	Natural Resources Conservation	2018	✓	-	-
ENV-306 B	Global Environmental Issues	2018	✓	-	-
ENV-401	Water Resources and Watershed Management	2018	✓	-	✓
ENV-402	Remote Sensing and GIS	2018	✓	✓	✓
ENV-403	Practical-I	2018	✓	✓	✓
ENV-404	Project Work and Comprehensive Viva-Voce	2018	✓	✓	✓
ENV-405 A	Disaster Mitigation and Management	2018	✓	-	✓
ENV-405B	Environmental Laws, Policies and Legislation	2018	✓	-	-
ENV-405 C	Environmental Education	2018	✓	-	-
ENV-406 A	Forest Resources and Management	2018	✓	-	-
ENV-406 B	Environmental Management and Sustainable Development	2018	✓	-	-
34	Fishery Sciences & Aquaculture				
AQC 101	Concepts of Aquatic Ecology	2018-19			
AQC 102	Systematics And External Anatomy of Cultivable Organisms	2018-19			
AQC 103	Identification and Morphology of Cultivable Organisms	2018-19			
AQC 104	Fish Nutrition	2018-19			
AQC 105	Fish Nutrition and Water Quality Management	2018-19			
AQC 106	Human Values and Professional Ethics – I	2018-19			
AQC 201	Principles of Aquaculture	2018-19			
AQC 202	Physiology of Cultivable Organisms	2018-19			
AQC 203	Soil and Water Characteristics	2018-19			
AQC 204	Physiology of Fin Fish and Shell Fish	2018-19			
AQC 205	Fresh Water Aquaculture	2018-19			
AQC 206	Human Values and Professional Ethics - II	2018-19			
AQC 301	Microbiology and Fish Pathology	2018-19			
AQC 302	Fish Immunology	2018-19			
AQC 303	Microbiology and Fish Diseases	2018-19			
AQC 304	Cell Biology, Genetics and Immunology	2018-19			
AQC 305	a) Cell Biology and Genetics	2018-19			
AQC 306	b) Fishery Economics, Extension and Environmental Management	2018-19			
AQC 307	c) Coastal Aquaculture	2018-19			
AQC 308	a) Fish Processing Technology	2018-19			
AQC 309	b) Pollution and Toxicology	2018-19			
AQC 310	c) Environmental Monitoring and Biodeterioration	2018-19		✓	
AQC 401	Aquaculture Biotechnology	2018-19		✓	
AQC 402	Essentials of Biochemistry	2018-19			
AQC 403	Biotechnology and Biostatistics	2018-19			
AQC 404	Project Work	2018-19			
AQC 405	a) Computer Applications, Information Technology and Biostatistics in Aquaculture	2018-19		✓	
	AQC405B: Aquaculture Engineering	2018-19			
AQC 406	b)Fish Breeding and Hatchery Management	2018-19			
AQC 407	c) Limnology	2018-19		✓	

		AQC 408	a) Bioinformatics in Aquaculture	2018-19			
		AQC 409	b) General Principles and Practices of Aquaculture	2018-19			
35	Geography						
		GEG-101	Geomorphology	2018	√	√	√
		GEG-102	Economic Resource Studies	2018	√		√
		GEG-103P	Maps Scales and Map Projections	2018		√	√
		GEG-104P	Terrain Mapping Techniques	2018		√	√
		GEG-105	Advanced Cartography	2018		√	√
		GEG-106	Human Values and Professional Ethics-I	2018			√
		GEG-201	Climatology and Oceanography	2018	√	√	√
		GEG-202	Principles of Remote Sensing	2018	√		√
		GEG-203P	Interpretation of topographical and Weather Maps	2018	√	√	√
		GEG-204P	Techniques of Mapping and Map Analysis	2018		√	√
		GEG-205	Geographical Thought	2018	√		
		GEG-206	Human Values and Professional Ethics-II	2018			
		GEG-301	Urban Studies	2018		√	√
		GEG-302	Geographical Information System(G.I.S)	2018	√	√	
		GEG-303P	Geographical Information System(G.I.S)	2018	√	√	
		GEG-304P	Statistical Techniques	2018			
		GEG-305A	Agricultural Studies	2018	√		
		GEG-305B	Pradesh	2018			
		GEG-305C	Disaster Management Studies	2018			
		GEG-306A	Regional Geography of Andhra Pradesh	2018			
		GEG-306B	Geographical information System(GIS)and Global Positioning System(GPS) applications	2018	√	√	√
		GEG-401	Regional Planning	2018			√
		GEG-402	Advanced Remote Sensing	2018			
		GEG-403P	Research Techniques	2018			
		GEG-404P	Remote Sensing Applications	2018	√		
		GEG-405A	Water and Soil Resource Management	2018			√
		GEG-405B	Environmental Studies	2018			
		GEG-405C	Geography for Research Extension and industry	2018			
		GEG-406A	Regional Geography of India	2018			
		GEG-406B	Remote sensing Principles and Applications	2018			√
36	Geology						
		GEO-101	Geomorphology	2018	√		
		GEO-102	Crystallography & Mineralogy	2018		√	√
		GEO-103P	Crystallography & Mineralogy	2018		√	√
		GEO-104P	Geomorphology & Paleontology	2018	√		
		GEO-105	Stratigraphy & Paleontology	2018	√		

		GEO-106	Human Values & Professional Ethics-I	2018		
		GEO-201	Structural Geology and Geotectonics	2018		✓
		GEO-202	Remote Sensing and GIS	2018		✓
		GEO-203P	Structural Geology & Sedimentology	2018	✓	
		GEO-204P	Remote Sensing and GIS	2018		✓
		GEO-205	Sedimentology	2018	✓	
		GEO-206	Human Values & Professional Ethics-II	2018		
		GEO-301	Igneous Petrology	2018	✓	✓
		GEO-302	Metamorphic Petrology	2018	✓	✓
		GEO-303P	Petrology	2018	✓	✓
		GEO-304P	Geochemistry	2018	✓	
		GEO-305	Geochemistry and Thermodynamics	2018		
		GEO-306	Computer Applications and Geostatistics	2018		
		GEO-307	Dimensional Stones and Building Materials	2018		✓
		GEO-308	Gemmology	2018		✓
		GEO-309	Surveying and Field Geology	2018		✓
		GEO-401	Economic Geology	2018	✓	✓
		GEO-402	Mineral Exploration, Mining & Engineering Geology	2018	✓	
		GEO-403P	Economic Geology	2018	✓	
		GEO-404P	Project Work	2018	✓	
		GEO-405	Hydrogeology	2018		✓
		GEO-406	Environmental Geology & Natural Hazards	2018		
		GEO-407	Water Shed Management	2018	✓	
		GEO-408	Medical Geology	2018	✓	
		GEO-409	Fuel Geology	2018		
37	Home sciences food science Nutrition & I					
		FSND-101	Food Chemistry and Analysis	2018	✓	
		FSND -102	Food Science and Experimental Foods	2018		✓
		FSND -103	Clinical Nutrition and Dietetics-I	2018	✓	✓
		FSND -104	Food Chemistry and Analysis Practical	2018	✓	✓
		FSND -105	Food Science and Experimental Foods Practical	2018		✓
		FSND -106	Clinical Nutrition and Dietetics-I Practical	2018	✓	✓
		FSND -107	Essential of Food and Community Nutrition	2018	✓	
		FSND -108	Human Values and Professional Ethics-I	2018		✓
		FSND -201	Nutritional Bio chemistry	2018		✓
		FSND -202	Food Microbiology and Safety	2018	✓	
		FSND -203	Clinical Nutrition and Dietetics-II	2018	✓	✓
		FSND -204	Nutritional Bio chemistry Practical	2018		✓
		FSND -205	Food Microbiology and Safety Practical	2018	✓	✓
		FSND -206	Clinical Nutrition and Dietetics-II Practical	2018	✓	✓
		FSND -207	Research Methodology	2018		✓
		FSND -208	Human Values and Professional Ethics-II	2018		✓
		FSND -301	Food Processing and Preservation Technology	2018		✓
		FSND -302	Advanced Human Nutrition	2018		✓

		HDCW-306 (A)	Fundamentals of Food, Nutrition and Health	2018			
		HDCW-306 (B)	Nutritional Assessment	2018			√
		HDCW-401	Guidance and Counseling in Human Development	2018	√		√
		HDCW-402	Advanced Human Development	2018			√
		HDCW-403	Thesis/Rehabilitation and Management of Children with Special Needs	2018	√		√
		HDCW-404	Guidance and Counseling Practical	2018	√		√
			Child and Human Rights				
					√		
		HDCW-405 (A)		2018			
		HDCW-405 (B)	Behavioral problems and Disorders among Children	2018	√		
			Child Welfare Programmes				
					√		
		HDCW-406 (A)		2018			
		HDCW-406 (B)	Disaster management	2018			
	Extension Management and Communicati						
		EMCT-101	Extension Education in Community Development	2018	√		
		EMCT-102	Community Nutrition	2018			√
		EMCT-103	Communication and Media Preparation	2018	√		
		EMCT-104	Extension Education in Community Development Practical	2018	√		√
		EMCT-105	Community Nutrition Practical	2018			√
		EMCT-106	Communication and Media Preparation Practical	2018	√		√
		EMCT-107	Dynamics of Rural Society	2018	√		
		EMCT-108	Human Values and Professional Ethics-I	2018			√
		EMCT-201	Entrepreneurial Development and Empowerment of Women	2018	√	√	√
		EMCT-202	Educational Technology	2018	√		√
		EMCT-203	Community organization and Leadership	2018	√		√
		EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2018	√	√	√
		EMCT-205	Educational Technology Practical	2018	√		√
		EMCT-206	Community Organization and Leadership Practical	2018	√		√
		EMCT-207	Research Methodology	2018	√		√
		EMCT-208	Human values and Professional Ethics-II	2018			√
		EMCT-301	Rural Development Administration	2018	√		√
			Training and Development				
		EMCT-302		2018	√		√
		EMCT-303	Rural Work Experience	2018			√
		EMCT-304	Internship	2018	√		√
			(a) Managerial Skills for Extension Professionals				
			(b) Communication Technologies in Extension		√		√

		c) Sustainable Livelihood Systems				
	EMCT-305		2018			
		(a) Fundamentals of Food. Nutrition and Health			√	√
		(or)				√
		(b) Nutritional Assessment				
	EMCT-306		2018			
	EMCT-401	Principles of Guidance and Counseling	2018	√		√
	EMCT-402	Extension Programme Planning and Evaluation	2018	√	√	√
	EMCT-403	Thesis/ Community Health Management	2018	√		
	EMCT-404	Principles of Guidance and Programme Planning Practical	2018	√		
		(a) Extension Management				
		(b) Science & Technology for Rural Women		√		√
	EMCT-405	(c) Environmental Management	2018			
		(a) Child Welfare Programmes		√		
		or				
	EMCT-406	(b) Disaster Management	2018			
	Food Technology					
	FT-101	Food Chemistry and Analysis	2018	√		
	FT-102	Food Science and Experimental Foods	2018	√		
	FT-103	Cereal Grains, Legumes and Oilseed Technology	2018	√		
	Practical-I	Food Chemistry and Analysis	2018	√		√
	Practical-II	Food Science and Experimental Foods	2018	√		√
	Practical-III	Cereal Grains, Legumes and Oilseed Technology	2018	√	√	
	FT-104	Essentials of Food and Community Nutrition	2018			
	FT-105	Human Values and Professional Ethics - I	2018			√
	FT-201	Technology of Horticulture produce	2018	√		
	FT-202	Food Microbiology and Safety	2018	√		√
	FT-203	Dairy Technology	2018	√		
	Practical-I	Technology of Horticulture produce	2018	√	√	√
	Practical-II	Food Microbiology and Safety	2018	√		√
	Practical-III	Dairy Technology	2018	√	√	√
	FT-204	Research Methodology	2018			√
	FT-205	Human Values and Professional Ethics – II	2018			√
	FT-301	Food processing and Preservation Technology	2018	√		√
	FT-302	Live Stock and Sea Food technology	2018	√		√
	Practical-I	Food Processing and Preservation Technology	2018	√	√	√
	Practical-II	In plant training.	2018	√	√	√
	FT-303(a)	a) Unit operations in Food Industry.	2018	√		√
	FT -303(b)	b) Spices, Condiments and Plantation Crops	2018	√		
	FT -303(c)	c) Nutrition in Emergencies and Disaster	2018			
	FT -304(a)	(a) Fundamentals of Food, Nutrition and Health	2018	√		
	FT -304(b)	b) Nutritional Assessment	2018			√

		FT-401	Food Safety Standards and Quality Control	2018	√		√
		FT-402	Food Product Development and Marketing	2018	√		√
		FT-403	Nutrition for Health and Fitness/Project Work	2018	√	√	
		Practical-I	Food Safety standards and Product Development	2018	√	√	√
			(a) Institutional food service management				
		FT-404(a)		2018	√	√	
		FT-404(b)	(b)Basic Food Engineering	2018	√		√
		FT-404(c)	(c)Food Packaging	2018	√	√	
		FT- 405(a)	(a) Child Welfare Programmes	2018			
		FT- 405(b)	(b)Disaster Management	2018			
38	Mathematics	MA 101	Algebra	2018			√
		MA 102	Real analysis	2018			√
		MA 103	Ordinary Differential equations	2018			√
		MA 104	Complex analysis	2018			√
		MA 105	Computer Oriented Numerical Methods	2018	√		√
		MA 106	Human Values & Professional Ethics-I	2018	√	√	√
		MA 201	Galois Theory	2018			√
		MA 202	Partial Differential Equations	2018			√
		MA 203	Topology	2018			√
			a) Advanced Complex analysis				
			b) Semi group theory				√
		MA 204	c) Non linear Analysis	2018			
		MA 205	Human Values & Professional Ethics-II	2018	√	√	√
		MA 206	Measure and Integration	2018			√
		MA 301	Commutative Algebra	2018			√
		MA 302	Functional Analysis	2018			√
		MA 303	Classical Mechanics	2018	√		√
			a) Differential Geometry				
			b) Cryptography		√	√	√
		MA 304	c) Linear Algebra	2018			
			a)Discrete Mathematics				
			b) Business Mathematics		√	√	√
			c) Basic Mathematics for Social Sciences				
		MA 305		2018			
		MA 401	Number Theory	2018			√
		MA 402	Banach Algebra	2018			√
		MA 403	Graph Theory	2018	√	√	√
			a) Mathematical Statistics				
			b) Approximation Theory		√	√	√
		MA 404	c) Algebraic coding Theory	2018			
			a)Operation Research				

		MA 405	b) Theoretical Computer Science c) Biomechanics	2018	✓	✓	✓
	Applied Mathematics	AM 101	Methods of Applied Mathematics	2018			✓
		AM 102	Real analysis	2018			✓
		AM 103	Ordinary Differential equations	2018			✓
		AM 104	Complex analysis	2018			✓
		AM 105	Human Values & Professional Ethics-I	2018	✓	✓	✓
		AM 106	Computer Oriented Numerical Methods	2018	✓		✓
		AM 201	Mathematical Modeling	2018			✓
		AM 202	Partial Differential Equations	2018			✓
		AM 203	Topology	2018			✓
			d) Advanced Complex analysis				
			e) Semi group theory				✓
		AM 204	f) Non linear Analysis	2018			
		AM 205	Human Values & Professional Ethics-II	2018	✓	✓	✓
		AM 206	Measure and Integration	2018			✓
		AM 301	Continuum Mechanics	2018	✓		✓
		AM 302	Functional Analysis	2018			✓
		AM 303	Classical Mechanics	2018	✓		✓
			d) Differential Geometry				
			e) Cryptography		✓	✓	✓
		AM 304	f) Linear Algebra	2018			
			a) Discrete Mathematics				
			b) Business Mathematics		✓	✓	✓
			c) Basic Mathematics for Social Sciences				
		AM 305		2018			
		AM 401	Number Theory	2018			✓
		AM 402	Fluid Dynamics	2018	✓		✓
		AM 403	Graph Theory	2018	✓		✓
			d) Mathematical Statistics				
			e) Approximation Theory		✓	✓	✓
		AM 404	f) Algebraic coding Theory	2018			
			a) Operation Research				
			b) Theoretical Computer Science		✓	✓	✓
		AM 405	c) Biomechanics	2018			
39	Microbiology	MB-101	Biological Chemistry & Analytical Techniques	2018	√	√	√
		MB-102	Enzymology & Microbial Physiology & Metabolism	2018	√	√	√
		MB-103P	Practical – I .Biological Chemistry & Analytical Techniques	2018	√	√	√
		MB-104P	Practical – II Enzymology & Microbial Physiology & Metabolism	2018			√
		MB-105	Introductory Microbiology	2018			√
		MB-106	Human Values and Professional Ethics – I	2018	√		√

MB-201	Immunology	2018	√	√	√
MB-202	Medical Microbiology	2018	√	√	√
MB-203P	Practical – I Immunology	2018	√	√	√
MB-204P	Practical – II Medical Microbiology	2018	√	√	√
MB-205	Basics of Virology	2018			√
MB-206	Human Values and Professional Ethics –II	2018	√		√
MB-301	Microbial Genetics and Molecular Biology	2018	√	√	√
MB-302	Recombinant DNA Technology & Bioinformatics	2018	√	√	√
MB-303	Microbial Genetics and Molecular Biology & Recombinant DNA Technology & Bioinformatics	2018	√	√	√
MB-304	a) Agricultural Microbiology b) Food Microbiology	2018	√	√	√
MB-305	a) Agricultural Microbiology b) Food Microbiology	2018	√	√	√
MB-306	a) Applied Microbiology b) Industrial Food Microbiology	2018	√	√	√
MB-401	Molecular Cell Biology & Technology	2018	√		√
MB-402	Environmental Microbiology	2018	√	√	√
MB-403	Molecular Cell Biology & Technology & Environmental Microbiology	2018	√		√
MB-404	Project	2018			√
MB-405	a) Agricultural Biotechnology b) Bioprocess Engineering	2018	√	√	√
MB-406	a) Fermentation Technology b) Pharmaceutical Microbiology	2018	√	√	√

M.SC. Industrial Microbiology

IMB-101	Biological Chemistry & Analytical Techniques	2018	√	√	√
IMB-102	Enzymology & Microbial Physiology & Metabolism	2018	√	√	√
IMB-103P	Practical – I .Biological Chemistry & Analytical Techniques	2018	√	√	√
IMB-104P	Metabolism	2018			√
IMB-105	Introductory Microbiology	2018			√
IMB-106	Human Values and Professional Ethics – I	2018	√		√
IMB-201	Immunology	2018	√	√	√
IMB-202	Medical Microbiology	2018	√	√	√
IMB-203P	Practical – I Immunology	2018	√	√	√
IMB-204P	Practical – II Medical Microbiology	2018	√	√	√
IMB-205	Basics of Virology	2018			√
IMB-206	Human Values and Professional Ethics –II	2018	√		√
IMB-301	Fundamentals of Industrial Microbiology	2018	√	√	√
IMB-302	Food Microbiology and Fermentation Technology	2018	√	√	√
IMB-303	Fundamentals of Industrial Microbiology	2018			√
IMB-304	Food Microbiology and Fermentation Technology	2018	√	√	√
IMB-305	a) Bioprocessing of Industrial Microorganisms and their Products b) Bioprocess Engineering and Technology	2018	√		√

IMB-306	a) Industrial Biotechnology b)Immuno Technology and Human Health	2018	√	√	√
IMB-401	Downstream Processing Technology	2018	√		√
IMB-402	Cell and Pharmaceutical technology	2018	√	√	√
IMB-403	technology	2018	√		√
IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2018			√
IMB-405	a) Biostatistics & Bioinformatics b) Biosafety, Bioethics and Intellectual property rights	2018			√
IMB-406	a) Microbes in Human Welfare b) Medical and Diagnostic Microbiology	2018	√	√	√

40 Physics

PHY 101	Classical Mechanics and Theory of Relativity	2018			√
PHY 102	Atomic and Molecular Physics	2018			
PHY 103	Solid State Physics	2018			
PHY 104	Analog and Digital Electronics	2018			
PHY 105	General Physics lab. - I	2018			
PHY 106	Electronics lab. - I	2018			√
PHY 201	Statistical Mechanics	2018			
PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2018			√
PHY 203	Mathematical Physics	2018			
PHY 204	Nuclear Physics and Analytical Techniques	2018		√	√
PHY 205	General Physics lab. - II	2018			
PHY 206	Electronics lab. - II	2018			√
PHY 301	Quantum Mechanics – I	2018	√		
PHY 302	Physics of semiconductor devices	2018	√		
PHY 303	A) Applied Spectroscopy-I B) Condensed Matter Physics-I C) Electronics-embedded systems	2018 2018 2018	√ √ √		
PHY 304	A) Photonics- I B) Solar Energy-Thermal Aspects C) Vacuum and Thin Film Technology	2018 2018 2018	√ √ √		
PHY 305	Specialization-Lab.	2018			
PHY 306	Elective - Lab	2018			
PHY 401	Quantum Mechanics - II	2018			√
PHY 402	Advances in Physics	2018			√
PHY 403	A) Applied Spectroscopy-II B) Condensed Matter Physics-II C) Electronics-Wireless Communications	2018 2018 2018			√ √ √
PHY 404	A) Photonics - II B) Solar Energy-Photovoltaic Aspects C) Properties and Applications of Thin Films	2018 2018 2018	√ √ √		√ √ √
PHY 405	Specialization-Lab. – II / Project Work	2018 2018			√ √
PHY 406	Elective – Lab. - II / Project Work	2018 2018			

41	Psychology							
						√		
		PSY 103b	Psychological Measurement-I(CF)	2018		√		
		PSY 103c	Positive Psychology (CF)	2018		√		
		PSY 104a	Child Development Psychology	2018		√	√	
		PSY 104b	Psychological Measurement & Statistics	2018		√		
		PSY 104c	Forensic Psychology	2018		√	√	
		PSY 105	Practicals related to General Psychology –II& Psychopathology-II	2018			√	
		PSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2018				
		PSY 203a	Psychopathology-II (CF)	2018		√		
		PSY 203b	Psycho-Diagnosis (CF)	2018		√	√	
		PSY 203c	Computer Application in Psychological Research-(CF)	2018		√	√	
		PSY 204b	Consumer Behavior	2018		√		
		PSY 204c	Industrial & Organizational Psychology	2018		√		
		PSY 205	Practicals related to General Psychology –II& Psychopathology-II	2018			√	
		PSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2018			√	
		PSY 301	Counseling Psychology (CC)	2018		√	√	
		PSY 302	Psychology of Personality (CC)	2018		√		
		PSY 303a	Organizational Behavior & HRM (GE)	2018		√		
		PSY 303b	Therapeutic Approaches in Counseling-I	2018		√	√	
		PSY 303c	Health Psychology(GE)	2018		√		
		PSY 304	Core & Generic Elective	2018		√	√	
		PSY 305	Stress Management Theory & Practical	2018		√	√	
		PSY 306	Personality Development (OE)	2018		√		
		PSY 401	Therapeutic Approaches in Counseling-II(CC)	2018		√	√	
		PSY 401c	c. Rehabilitation Psychology (GE)	2018		√	√	
		PSY 404	Core & Generic Elective	2018		√	√	
		PSY 406	Life Skills (OE)	2018		√	√	
			Counselling psychology					
			CPSY 103a	Psychopathology-I (CF)	2018		√	
			CPSY 103b	Psychological Measurement-I(CF)	2018		√	
	CPSY 103c	Positive Psychology (CF)	2018		√			
	CPSY 104a	Child Development Psychology	2018		√	√		
	CPSY 104b	Psychological Measurement & Statistics	2018		√			
	CPSY 104c	Forensic Psychology	2018		√	√		
	CPSY 105	Practicals related to General Psychology –II& Psychopathology-II	2018			√		
	CPSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2018					
	CPSY 203a	Psychopathology-II (CF)	2018		√			

		CPSY 203b	Psycho-Diagnosis (CF)	2018	√		√
		CPSY 203c	Computer Application in Psychological Research-(CF)	2018	√		√
		CPSY 204b	Consumer Behavior	2018	√		
		CPSY 204c	Industrial & Organizational Psychology	2018	√		
		CPSY 205	Practicals related to General Psychology –II& Psychopathology-II	2018			√
		CPSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2018			√
		CPSY 301	Counselling Process	2018	√		√
		CPSY 302	Counselling Skills	2018	√		
		CPSY 303a	Therapeutic Approaches in Counseling-I	2018	√		
		CPSY 303b	Counseling in Organizational Settings	2018	√		√
		CPSY 303c	Health Psychology	2018	√		
		CPSY 304	Practicals related to counseling skills & Counseling in Organizational Settings	2018	√		√
		CPSY 305	Stress Management & Counseling Psychology	2018	√		√
		CPSY 306	Personality Development	2018	√		
		CPSY 401	Applications of Counselling in Special Areas	2018	√		√
		CPSY 402	Therapeutic Approaches in Counselling-II	2018	√		√
		CPSY 403a	Counseling in Hospital Settings	2018	√		√
		CPSY 403b	Counseling in Community Settings		√		
		CPSY 403b	Family Counseling	2018	√		√
		CPSY 403c	Family Counseling	2018	√		√
		CPSY 404	Practicals related to counseling techniques & applications in different areas	2018	√		√
		CPSY 405	Allotment of Project work (Theory and Practice)	2018			
		CPSY 406	Life Skills (OE)	2018			
42	Statistics	ST - 305 (a)	Bio-Statistics	2018-19	yes	-	-
		ST - 305 (c)	Total Quality Management and Six- Sigma	2018-19	-	yes	-
		ST - 405 (b)	Statistics for Research, industry and Community Development	2018-19	-	yes	-
		ST - 405 (c)	Advanced Econometric Models	2018-19	yes	-	-
		ST - 406 (b)	Survival Analysis	2018-19	yes	-	-
		APST- 305(a)	Advanced Bio-Statistics	2018-19	yes	-	-
		APST-305 (c)	Data Mining and Information Security	2018-19	-	-	yes
		APST-305 (a)	Statistics for Research, industry and Community Development	2018-19	-	yes	-
		APST-305 (c)	Actuarial Statistics	2018-19	-	--	yes
43	Virology	VR-101	General Microbiology	2018	√	-	-
		VR-102	General Virology	2018			
		VR-103(P)	General Microbiology and Virology	2018	√	√	√
		VR-104(P)	Biological Chemistry and Analytical Techniques	2018	√	√	√
		VR-105	Biological Chemistry and Analytical Techniques	2018	√	-	-
		VR-106	Human values and Professional ethics - I	2018	-	-	-

VR-201	General Microbiology	2018	✓	-	-
VR-202	General Virology	2018	✓	✓	✓
VR-203(P)	General Microbiology and Virology	2018	✓	✓	✓
VR-204(P)	Biological Chemistry and Analytical Techniques	2018	✓	✓	✓
VR-205	Biological Chemistry and Analytical Techniques	2018	✓	✓	✓
VR-206	Human values and Professional ethics - I	2018	-	-	-
VR-301	Plant Virology	2018	✓	-	-
VR-302	Plant Viruses and Diseases	2018	✓	-	✓
VR-303(P)	Plant Virology and Plant Viruses and Diseases	2018	✓	-	✓
VR-304(P)	a) Molecular Virology (OR) b) Biostatistics and Bio-informatics	2018	✓	✓	✓
VR-305	(a) Molecular Virology (OR) (b) Biostatistics and Bio-informatics	2018	✓	-	-
VR-306	(a) Biology of Viruses and their management (OR) (b) Biology of Virus Vectors and their management	2018	-	✓	-
VR-401	Animal and Human Virology	2018	✓	-	-
VR-402	Animal and Human Virus Diseases	2018	✓	-	✓
VR-403	Animal and Human Virology & Virus Diseases	2018	✓	✓	✓
VR-404-A(P) (OR)	Applied Virology/Tumor Biology and Viruses (OR)		✓	✓	✓
VR-4:04-B(P)	Project work related to Virology	2018			
VR-405	(a) Applied Virology (OR) (b)Tumor Biology and Viruses	2018	✓	✓	✓
VR-406	(a) Clinical Virology (OR) (b) Emerging Infectious Viral Diseases	2018	✓	✓	✓
44 Zoology					
ZOO-101	Invertebrata & Chordata	2018	---	---	---
ZOO-102	Genetics & Evolution	2018	✓		✓
ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2018			✓
ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2018	✓	✓	✓
ZOO-105	Metabolic Regulation & Cell Function	2018	✓		✓
ZOO-106	Human Values and Professional Ethics-I	2018			✓
ZOO-201	Cell Biology & Immunology	2018	✓		✓
ZOO-202	Molecular Biology Practical-I	2018	✓	✓	✓
ZOO-203P	Molecular Biology and Cell Biology Practical-II	2018	✓		✓
ZOO-204P	Comparative Animal Physiology and Immunology	2018	✓		✓
ZOO-205	Comparative Animal Physiology	2018	✓		✓
ZOO-206	Human Values and Professional Ethics-II	2018			✓
ZOO-301	Developmental Biology	2018	✓		✓

ZOO-302	Environmental Biology	2018	✓		✓
ZOO-303P	Developmental Biology and Tools & Techniques	2018	✓	✓	✓
ZOO-304P	Environmental Biology and Enzymology	2018	✓		✓
ZOO-305A	Tools & Techniques	2018	✓	✓	✓
ZOO-305B	Enzymology	2018	✓		✓
ZOO-305C	Bioinformatics & Biostatistics	2018	✓		✓
ZOO-306A	Economic Zoology	2018	✓	✓	✓
ZOO-306B	Genetic Engineering	2018	✓	✓	✓
ZOO-306C	Human Health and Infectious diseases	2018	✓	✓	✓
ZOO-401	Neurobiology	2018	✓		✓
ZOO-402	Toxicology	2018	✓		✓
ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2018	✓	✓	✓
ZOO-404P	Toxicology and Animal Behavior & Wild life	2018	✓		✓
ZOO-405A	Animal Biotechnology & Microbiology	2018	✓		✓
ZOO-405B	Animal Behavior & Wild life	2018	✓		✓
ZOO-405C	Endocrinology	2018	✓		✓
ZOO-406A	Environmental Impact Assessment & Green Auditing	2018	✓		✓
ZOO-406B	Structural Biology	2018	✓		✓
ZOO-406C	Pathobiology	2018	✓		✓
Animal Biotechnology	ABT- Core- 101	Metabolic Regulation & Cell Function (MRCF)	2018	✓	
	ABT- Core- 102	Tools & Techniques (TT)	2018		✓
	ABT-Core-P-103	MRCF	2018	✓	✓
	ABT-Core-P-104	TT	2018	✓	✓
	ABT-CF-105	Microbiology and Diseases	2018	✓	✓
	ABT -EF- 106	Human Values & Professional Ethics (HVPE)-I	2018		✓
	ABT- Core- 201	Molecular Biology (MB)	2018	✓	✓
	ABT- Core- 202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2018	✓	✓
	ABT-Core-P-203	MB & IM	2018	✓	✓
	ABT-Core-P-204	ACC-SCB & CB	2018	✓	✓
	ABT- CF-205	Cell Biology & Immunology (CB&IM)	2018	✓	
	ABT- EF- 206	Human Values & Professional Ethics (HVPE)-II	2018		✓
	ABT- Core- 301	Enzymology (ENZ)	2018	✓	✓
	ABT- Core- 302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2018	✓	✓
	ABT-Core-P-303	ENZ & GE	2018	✓	✓
	ABT-Core-P-304	ARBTT & EBT	2018	✓	✓
	GE-305A	Cancer Biology	2018	✓	✓
	GE-305B	Environmental Biotechnology (EBT)	2018	✓	✓
	GE-305C	Biostatistics & Bioinformatics	2018	✓	✓
	OE-306A	Animal Biotechnology & Industrial Applications	2018	✓	✓
	OE-306B	Genetic Engineering (GE)	2018	✓	✓
	ABT- Core- 401	Medical Biotechnology (MBT)	2018	✓	✓

		ABT- Core- 402	Fermentation Technology and Down streaming Process (FTDSP)	2018	✓		✓
		ABT-Core-P-403& 404	Project and Viva- Voce	2018	✓	✓	✓
		GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2018	✓		✓
		GE-405B	Drug design and Development	2018	✓		✓
		GE-405C	Animal Cell Culture Techniques	2018	✓		✓
		OE-406A	Advanced Genomics and Proteomics	2018	✓		✓
		OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2018	✓		✓
45	Business Management MBA						
		MBA-101	Management and Organizational Behaviour	2018			✓
		MBA-102	Managerial Communication	2018	✓	✓	✓
		MBA-104	Accounting for managers	2018	✓		
		MBA-108	Human Values and Professional Ethics-I	2018	✓	✓	✓
		MBA-201	Marketing Management	2018			✓
		MBA-204	Production Management	2018			✓
		MBA-208	Leadership values and Styles	2018		✓	✓
		MBA-302	Entrepreneurship	2018		✓	
		MBA-303	Industrial Project Course	2018	✓	✓	
		MBA-401	Digital Business Models	2018	✓		
		MBA-402	Strategic Management	2018			✓
		MBA-404	Organisation Development	2018			✓
46	Computer Science						
S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
46	MCA	MCA 101	Discrete Mathematical Structures	2018	✓		
		MCA 102	Introduction to Internet Technologies	2018	✓		
		MCA 103	Object Oriented Programming with JAVA	2018	✓		
		MCA 104	Computer Organization	2018	✓		
		MCA 105	105A Business and Management	2018	✓	✓	
			105B Essentials of Management	2018	✓	✓	
		MCA 106	Human values and Professional Ethics	2018		✓	
		MCA 107P	Software Lab based in 101 & 103	2018	✓		✓
		MCA 108P	Internet technologies Lab	2018	✓		✓
		MCA 109P	PC Hardware & Office Automation Lab	2018	✓		✓
		MCA 201 A	Probability and Statistics for Computer Applications	2018	✓		
			Statistical Methods for Computer		✓		

MCA 201 B	Applications	2018	✓		
MCA 202	Data Structures using JAVA	2018	✓		
MCA 203	Operating Systems	2018	✓		
MCA 204	Advanced Database Management Systems	2018	✓		
MCA 205	Data Science Essentials	2018	✓		
MCA 206	Leadership values	2018	✓	✓	
MCA 207P	Software Lab (based on 201 & 203)	2018	✓		✓
MCA 208P	Data Structures Lab	2018	✓		✓
MCA 209P	Advanced Database Management Systems Lab	2018	✓		✓
MCA 210S	Group Desiccations	2018			
MCA 301	Computer Oriented Operations Research	2018		✓	
MCA 302	Data Communications and Computer Networks	2018	✓		
MCA 303	Software Engineering	2018	✓	✓	
MCA 304	Computer Graphics	2018	✓		
MCA 305	305A Technical Communication and Computer Ethics	2018	✓		
	305B Soft Skills	2018			✓
MCA 306P	Software lab (based on 301, 302 & 305)	2018	✓		✓
MCA 307P	Software Engineering Lab	2018	✓		✓
MCA 308P	Computer Graphics Lab	2018	✓		✓
MCA 309S	Seminar & Group Desiccations	2018			✓
MCA 401	Data Warehousing and Data Mining	2018	✓		
MCA 402	System Programming	2018	✓		
	403A Web Programming	2018	✓		
MCA 403	403B Artificial Intelligence	2018	✓		
	403C Software Testing	2018	✓		
	404A E-Commerce	2018	✓	✓	
MCA 404	404B Cyber Security	2018	✓		
	404C Neural Networks	2018	✓		
MCA 405 A	Accounting and Financial Management	2018	✓		
MCA 405 B	Accounting Essentials for Computer Applications	2018	✓		
MCA 406	Human Rights & Value Education	2018		✓	
MCA 407P	Data Mining Lab	2018	✓		✓
MCA 408P	System Programming Lab	2018	✓		✓
MCA 409P	Minor Project (by taking case studies from the Generic Elective courses)	2018	✓		✓
MCA 410S	Technical Seminar	2018			✓
MCA 501	Big data and Business Analytics	2018	✓		
MCA 502	Cloud Computing	2018	✓		
	Elective III				

		503A User Interface Design				
	MCA 503	503B Cryptography and Network Security		✓		
		503C Mobile App Development				
		503D IT in Forensic Science	2018			
		Elective IV 504A Image Processing 504B Multimedia System				
		504C Natural Language Processing		✓		
	MCA 504		2018			
	MCA 507P	Software Lab (Case studies from 501)	2018	✓		✓
	MCA 508P	Software Lab (Case studies from 502)	2018	✓		✓
	MCA 509P	Minor Project Work	2018	✓		✓
	MCA 509S	Seminar	2018			✓
	MCA 601	Major Project Work	2018	✓		✓
	MSC (Computer Science)					
	MSCS -101C	Computer Organization	2018	✓		
	MSCS -102C	Programming in Java & Data Structures	2018	✓		
	MSCS -103C	Operating Systems	2018	✓		
	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2018	✓		
	MSCS – 104 GE - B	Computer Oriented Operational Research	2018	✓		
	MSCS - 05CF	Environmental Studies	2018		✓	
	MSCS - 106EF	A. PC Hardware Basics	2018		✓	
	MSCS - 106EF	B. Statistical Methods	2018		✓	
	MSCS - 107P1		2018	✓		✓
	MSCS - 108P2		2018	✓		✓
	MSCS -201C	Advanced Data Base Management System	2018	✓		
	MSCS -202C	Computer Networks	2018	✓		
	MSCS -203C	Computer Graphics	2018	✓		
	MSCS- 204 GE – A	E- Commerce	2018	✓	✓	
	MSCS- 204 GE B	Accounting And Financial Management	2018	✓		
	MSCS- 205CF	Human Rights And Value Education	2018	✓		
	MSCS- 206 EF A	Principles Of Management	2018	✓	✓	
	MSCS- 206 EF B	Internet Of Things	2018	✓		
	MSCS- 207P1		2018	✓		✓
	MSCS- 208P2		2018	✓		✓
	MSCS-301C	Data Warehousing And Data Mining	2018	✓		
	MSCS-302C	Web Technologies	2018	✓		
	MSCS-303C	Software Engineering	2018	✓	✓	
	MSCS -304- GE-A	Systems Programming	2018	✓		
	MSCS -304- GE-B	Computer Algorithms	2018	✓		

		MSCS -304- GE-C	UID Using .Net Technologies	2018	✓		
		MSCS -304- GE-D	IT in Forensic Science	2018	✓		
		MSCS -304- GE-E	Software Testing	2018	✓		
		MSCS -305 GE-A	Cloud Computing	2018	✓		
		MSCS -305 GE-B	Big Data Analytics	2018	✓		
		MSCS -305 GE-C	Artificial Neural Networks	2018	✓		
		MSCS -305 GE-D	Cyber Security	2018	✓		
		MSCS -305 GE-E	Mobile App Development	2018	✓		
			The courses offered by other departments	2018			
			1. Programming in C	2018			
			2. Office Automation	2018	✓		
			3. Internet	2018			
		MSCS - 306OE	Fundamentals and Web Designing	2018			
		MSCS - 307P1		2018	✓		✓
		MSCS - 308P2		2018	✓		✓
		MSCS – 401	Major Project Work	2018	✓		✓
47	Commerce						
	Commerce (Regular)						
S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
47	M.com(R)	101	Accounting Standards & Reporting	2018	✓		
		102	Financial Management	2018	✓		✓
		103	Business Environment and Policy	2018		✓	✓
		104	Organisational Behaviour	2018	✓		✓
		105a	Quantitative Techniques for Business Decisions	2018			✓
		106	Human Values & Professional Ethics - II	2018		✓	✓
		201	Advanced cost Accounting	2018	✓		
		202	Financial Markets and Services	2018	✓		✓
		203	Strategic Financial Management	2018	✓		✓
		204	Corporate Governance	2018	✓	✓	
		205a	Working Capital Management	2018	✓	✓	
		206a	e-Banking Operations	2018			✓
		301	Security Analysis and Portfolio Management	2018	✓		✓
		302	Accounting for Managerial Decisions	2018	✓		✓
		303a.	Tally with GST Application	2018	✓		✓
		304c.	Entrepreneurship & MSMEs	2018	✓		✓
					✓		✓
		304a	Security Ananalysis & Portfolio Management	2018			
		305a	Fundamentals of Accounting	2018			✓
		401	Financial Derivatives	2018			✓

		402	Tax Planning & Managemnt	2018	√		√
		403a.	E-Commerce	2018	√		√
		404b.	Personality Development & Soft Skills	2018	√		√
		405a	Security Market Operations	2018	√		√
	M.Com (A&F)						
	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
	M.com(A&F)	101	Accounting Standards & Reporting	2018	√		
		102	Financial Management	2018	√		√
		103	Business Environment and Policy	2018		√	√
		104	Organisational Behaviour	2018	√		√
		105a	Quantitative Techniques for Business Decisions	2018			√
		106	Human Values & Professional Ethics - I	2018		√	√
		201	Advanced cost Accounting	2018	√		
		202	Financial Markets and Services	2018	√		√
		203	Strategic Financial Management	2018	√		√
		204	Corporate Governance	2018	√	√	
		205a	Working Capital Management	2018	√	√	
		206a	e-Banking Operations	2018			√
		301	Security Analysis and Portfolio Management	2018	√		√
		302	Accounting for Managerial Decisions	2018	√		√
		303a.	Tally with GST Application	2018	√		√
		303c.	Tax planning & Management	2018	√		√
					√		√
		304a	Accounting for Managerial Decisions	2018			
		305a	Fundamentals of Accounting	2018			√
		401	Financial Derivatives	2018			√
		402	Project Planning & Control	2018	√		√
		403a.	Insurance Management	2018	√		√
		403b.	Personality Development & Soft Skills	2018	√		√
		405a	Security Market Operations	2018	√		√
	M.Com (FM)						
S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
	M.com(FM)	101	Accounting Standards & Reporting	2018	√		
		102	Financial Management	2018	√		√
		103	Business Environment and Policy	2018		√	√
		104	Organisational Behaviour	2018	√		√
		105a	Quantitative Techniques for Business Decisions	2018			√
		106	Human Values & Professional Ethics - I	2018		√	√
		201	Advanced cost Accounting	2018	√		

202	Financial Markets and Services	2018	√		√
203	Strategic Financial Management	2018	√		√
204	Corporate Governance	2018	√	√	
205a	Working Capital Management	2018	√	√	
206a	e-Banking Operations	2018			√
301	Security Analysis and Portfolio Management	2018	√		√
302	Accounting for Managerial Decisions	2018	√		√
303a.	Tally with GST Application	2018	√		√
303c.	Tax planning & Management	2018	√		√
			√		√
304a	International Financial Management	2018			√
305a	Fundamentals of Accounting	2018			√
401	Financial Derivatives	2018			√
402	Project Planning & Control	2018	√		√
403a.	Insurance Management	2018	√		√
404d.	Mergers & Acquisitions	2018	√		√
405a	Security Market Operations	2018	√		√

48 B.Pharmacy

Name of the Programme	Course Code	Title of the Course	Year of Introduction	Employability	Entrepreneurship	Skill
B.Pharmacy	BPH 101A	Mathematics (For Bi.P.C. Stream)	2018	√		
	BPH 101B	Biology (For M.P.C. Stream)	2018	√		
	BPH 101C	Biology Practicals (For M.P.C. Stream)	2018	√	√	√
	BPH 102	English & Soft Skills	2018	√		√
	BPH 103	Pharmaceutical. Inorganic Chemistry	2018	√	√	
	BPH 104	Pharmaceutical Organic Chemistry-I	2018	√	√	
	BPH 105	Human Anatomy and Physiology	2018	√		
	BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2018	√	√	√
	BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2018	√	√	√
	BPH 108	Human Anatomy and Physiology Practicals	2018	√	√	√
	BPH 109	General & Dispensing Pharmacy	2018	√		
	BPH 110	Pharmaceutical Organic Chemistry-II	2018	√		
	BPH 111	Computer applications	2018	√		√
	BPH 112	Pharmacognosy I	2018	√		
	BPH 113	Human Anatomy and Physiology and Pathophysiology	2018	√		
	BPH 114	General & Dispensing Pharmacy Practicals	2018	√	√	√
	BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2018	√	√	√
	BPH 116	Computer applications Practicals	2018	√	√	√
	BPH 117	Pharmacognosy I Practicals	2018 2018	√	√	√
	BPH 201	Physical pharmacy –I (Theory)	2018	√		
	BPH 202	Pharmaceutical Engineering (Theory)	2018	√		
	BPH 203	Pharmaceutical organic chemistry III (Theory)	2018	√		
	BPH 204	Pharmaceutical Biochemistry (Theory)	2018	√		
	BPH 205	Environmental studies (Theory)	2018	√		

BPH 206	Physical pharmacy –I (Practical)	2018	✓	✓	✓
BPH 207	Pharmaceutical Engineering (Practical)	2018	✓	✓	✓
BPH 208	Pharmaceutical organic chemistry III (Practical)	2018	✓	✓	✓
BPH 209	Pharmaceutical Biochemistry (Practical)	2018	✓	✓	✓
BPH 210	Physical Pharmacy II (Theory)	2018	✓		
BPH 211	Pharmaceutical Analysis I (Theory)	2018	✓		
BPH 212	Pharmaceutical Technology I (Theory)	2018	✓		
BPH 213	Pharmacognosy II (Theory)	2018	✓		
BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2018	✓		
BPH 215	Pharmaceutical pharmacy II (Practical)	2018	✓	✓	✓
BPH 216	Pharmaceutical Analysis I (Practical)	2018	✓	✓	✓
BPH 217	Pharmaceutical technology I (Practical)	2018	✓	✓	✓
BPH 218	Pharmacognosy II (Practical)	2018	✓	✓	✓
BPH 301	Pharmaceutical Technology-II	2018	✓		
BPH 302	Medicinal chemistry – I	2018	✓		
BPH 303	Pharmacology – I	2018	✓		
BPH 304	Pharmaceutical microbiology	2018	✓		
BPH 305	Drug store and Industrial Management and Marketing	2018	✓		
BPH 306	Pharmaceutical Technology-II	2018	✓		
BPH 307	Medicinal chemistry-I practicals	2018	✓	✓	✓
BPH 308	Pharmaceutical Microbiology practicals	2018	✓	✓	✓
BPH 309	Medicinal chemistry-II (theory)	2018	✓		
BPH310	Pharmacology II– Theory	2018	✓		
BPH311	Pharmaceutical. Analysis II(Theory)	2018	✓		
BPH312A	Forensic Pharmacy– Theory	2018	✓		
BPH312B	Clinical Trials– Theory	2018	✓		
BPH312 C	Industrial.Pharmacy & Cosmetic Technology– Theory	2018	✓		
BPH313	Medicinal Chemistry-II Practicals	2018	✓	✓	✓
BPH314	Pharmacology-II Practicals	2018	✓	✓	✓
BPH315	Pharmaceutical. Analysis II Practicals	2018	✓	✓	✓
BPH 401	Medicinal Chemistry-III	2018	✓		
BPH 402	Pharmacology-III	2018	✓		
BPH 403:	Pharmacognosy-III	2018	✓		
BPH 404:	Biopharmaceutics & Pharmacokinetics	2018	✓		
BPH 405A:	Chemistry Of Natural Products	2018	✓		
BPH 405B:	Hospital & Community Pharmacy	2018	✓		
BPH 405C	Pharmacovigilance	2018	✓	✓	
BPH 406	Medicinal Chemistry-III Practicals	2018	✓	✓	✓
BPH 407	Pharmacology-III Practicals	2018	✓	✓	✓
BPH 408	Pharmacognosy-III Practicals	2018	✓	✓	✓
BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2018	✓	✓	✓
BPH 410:	Novel Drug Delivery Systems	2018	✓		
BPH 411	Pharmaceutical Biotechnology (Theory)	2018	✓		

		BPH 412:	Clinical Pharmacy & Therapeutics	2018	✓		
		BPH 414	Project Work & Seminar	2018	✓	✓	✓
	M.Pharmacy	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2018	✓		
		MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2018	✓		
		MPH 103	Practical 1	2018	✓	✓	✓
		MPH 104	Practical-II(MAT)	2018	✓	✓	✓
		MPH 105	Modern Analytical Techniques and biostatistics Theory	2018	✓		
		MPH 106	Human Values and Professional Ethics-I	2018	✓		
		MPH 107	Comprehensive Viva	2018	✓	✓	✓
		MPH 201A (Pharmacology)	Molecular Pharmacology	2018	✓		
		MPH 202 A	Methods in Drug Evaluation	2018	✓		
		MPH 203	Practical 1	2018	✓	✓	✓
		MPH 204	Practical-II(BPK)	2018	✓	✓	✓
		MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2018	✓		
		MPH 206	Human Values and Professional Ethics-II	2018	✓		
		MPH 207	Comprehensive Viva	2018	✓	✓	✓
		MPH 301	Mid-Term Evaluation of Research project	2018	✓	✓	✓
		MPH 401	Project thesis submission & presentation and Project Viva voce	2018	✓	✓	✓

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	Adult & Continuing Education	MA AE 1.1	Alternative learning systems	2019			√
		MA AE 1.2	Policy Studies In Adult/Continuing Education	2019			
		MA AE 1.3	Adult Psychology And Learning	2019			√
		MA AE 1.4	Socio-Philosophical Foundation Of Adult Education	2019			
		MA AE 1.5	Communication Methods in Adult Education	2019	√		
		MA AE 1.6	Human Values And Professional Ethics-I	2019			
		MAAE-2.1	Recent Trends In Adult And Continuing Education	2019			
		MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2019	√		√
		MAAE-2.3	Research Methods In Adult Education	2019	√		√
		MAAE-2.4	Field Work & Practical Assignments	2019	√		√
		MAAE-2.5	Management Of Adult/Continuing Education	2019			
		MAAE-2.6	Human Values And Professional Ethics-II	2019			
		MAAE-3.1	Training In Adult And Continuing Education	2019	√		√
		MAAE-3.2	Comparative Studies In Adult Education	2019			
		MAAE-3.3	Material Development For Adult& Continuing Education	2019			√
		MAAE-3.4A	Peoples' Participation And Development	2019	√		
		MAAE-3.4B	Vocational Education & Training	2019	√		
		MAAE-3.4C	Guidance And Counselling In Adult/Continuing Education	2019			
		MAAE-3.4D	Inclusive Education	2019			
		MAAE-3.5A	Information Technology For Continuing Education	2019			
		MAAE-3.5B	Entrepreneurship Development	2019	√		√
		MAAE-3.5C	Women's Education & Development	2019			
		MAAE-4.1	Monitoring & Evaluation	2019	√		
		MAAE-4.2	Human Resources Management& Development	2019			√
		MAAE-4.3	Dissertation / Project Work	2019			
		MAAE-4.4 A	Environmental Education	2019			
		MAAE-4.4 B	Statistical Methods For Social Research	2019			√
		MAAE-4.4 C	Development Strategies & Voluntarism	2019	√		
		MAAE-4.4 D	Population Education	2019			
		MAAE-4.5 A	Adult Education And Extension	2019			
MAAE-4.5 B	Skill Development Initiatives	2019					
MAAE-4.5 C	Career Guidance And Counselling	2019					
		MARDM-1.3	Indian Economic Scene	2019	√		
		MARDM-2.1	Rural Industrialisation	2019	√		√
		MARDM-2.3	Agriculture & Rural Bio Technology	2019			√
		MARDM2.4	Field Work& Practicals	2019			√
		MARDM-2.5	Rural Marketing & Management	2019		√	
		MARDM-3.1	Natural Resources Management -Land	2019	√		√
		MARDM3.2	Natural Resources Management -Water	2019	√		√
		MARDM-3.3	Natural Resources Management-Vegetation	2019	√	√	√
		MARDM-3.4a	Communications For Rural Development	2019			√
		MARDM3.4b	Micro Finance &Women Empowerment	2019	√		√

		MARDM-1.4c	Economics Of Agriculture	2019		√	
		MARDM3.5b	Skill Development Initiatives	2019			√
		MARDM-4.1	Agriculture And Rural Development	2019	√	√	
		MARDM-4.2	Rural Credit & Marketing	2019	√	√	
		MARDM4.3	Dissertation/Project Work	2019	√		√
		MARDM-4.1c	Rural Entrepreneurship	2019		√	
		MARDM- 4.1d	Vocational Education & Training	2019	√	√	√
		MARDM-5.1a	Human Resources Development In Rural Sectors	2019	√		√
	AIHC & Archaeology						
		AIHC&A-101	History of Ancient India upto 550 A.D.	2019			
		AIHC&A-102	History of India from 1206 A.D. to 1526 A.D.	2019			
		AIHC&A-103	History of Andhras upto 1323 A.D.	2019			
		AIHC&A-104	Ancient World Civilizations.	2019			
		AIHC&A-105A	Principles and Methods of Archaeology.	2019			√
		AIHC&A-105B	Advanced Archaeological Theory and Research Methodology	2019	√		
		AIHC&A-106A	Social and Political Institutions in Ancient India	2019			
		AIHC&A-106B	Indian Religious Movements.	2019			
		AIHC&A-107	Human Values and Professional Ethics-I.	2019			
		AIHC&A-201	History of India from 550 A.D to 1206 A.D.	2019			
		AIHC&A-202	History of Medieval India from 1526 A.D to 1707 A.D.	2019			
		AIHC&A-203	History of South India from 1323 A.D. to 1724 A.D.	2019			
		AIHC&A-204	Pre and Proto Historic Cultures of India	2019	√		
		AIHC&A-205A	History of Indian Archaeology	2019	√		√
		AIHC&A-205B	Cultural Heritage Management	2019			
		AIHC&A-206 A	India's Early Cultural Contacts with other Countries	2019			
		AIHC&A-206 B	Early History of South East Asia	2019			
		AIHC&A -207	Human Values and Professional Ethics-II	2019			
		AIHC&A-301	History of Indian Architecture	2019	√		
		AIHC&A-302	Epigraphy	2019			√
		AIHC&A-303A	History of Modern Andhra from 1724 A.D. to1956 A.D.	2019			
		AIHC&A-303B	Historiography and Historical Method	2019			
		AIHC&A-303C	Laboratory Methods in Scientific Archaeology	2019			√
		AIHC&A-303D	Temple Studies	2019			
		AIHC&A -304	Soft Skills in Archaeology	2019	√		√
		AIHC&A-305A	Outlines of Indian History	2019			
		AIHC&A-305B	Women in Indian History	2019			
		AIHC&A-401	History of Indian Art	2019			√
		AIHC&A-402	Numismatics	2019			√
		AIHC&A-403A	Museology	2019			√
		AIHC&A-403B	Historical Applications in Tourism	2019	√		
		AIHC&A-403C	Tour Guiding and Management	2019	√		

		AIHC&A-403D	Conservation of Cultural Property	2019			√
		AIHC&A-404	History of Science and Technology in Ancient India	2019			
		AIHC&A-405A	Introduction to Indian Archaeology	2019			
		AIHC&A-405B	History of Vijayanagara Empire	2019			
3	Area Studies Programme	SEAP 104	Ancient Indian History	2019	√		
		SEAP 203	Regional Geography of South Pacific and East Asia	2019			√
		SEAP 303 A	India and the World	2019	√		
		SEAP 402 C	Developing Blue Economy	2019			√
	MA Tourism	T 102	Planning and Development of Tourism	2019	√		
		T 201	Historical Application of Tourism	2019	√		
		T 301	Travel Agency and Tour Operations Management	2019		√	√
		T 303	Airline Ticketing and Information Management	2019			√
4	Centre for Extension Studies						
5	Centre for Gandhian Studies						
6	Centre for Womens Studies	SVUWS 101	Women's Studies- concepts, Principals & Issues	2019	√		√
		SVUWS 102	Health and Nutritional perspectives of women	2019	√	√	√
		SVUWS 103	Entrepreneurship Management & Development	2019	√	√	√
		SVUWS 104	Computer Applications: MS-word, MS-Excel, MS-Power-point	2019	√	√	√
		SVUWS 105A	Gender, environment, climate change & livelihood	2019	√		√
		SVUWS 105B	Gender Society and Power relations	2019			√
		SVUWS 105C	Social Process and Behavioral Issues	2019	√		√
		SVUWS-106A	Human Values And Ethics –I	2019			√
				2019			
		SVUWS-106	Leadership values	2019	√	√	√
		SVUWS 201	Women & Development	2019	√		√
		SVUWS 202	Research Methodology & SPSS	2019	√	√	√
		SVUWS 203	Sales and Marketing Management with focus on Gender perceptions	2019	√	√	√
		SVUWS 204	Skills Development Training – C Language, DBMS, Communication & Soft Skills	2019	√	√	√
		SVUWS 205A	Capacity building and leadership Training	2019	√	√	√
		SVUWS 205B	Gender & Media	2019	√	√	√
		SVUWS 205C	Social Work initiatives for women's Development	2019	√		√
		SVUWS-206A	6 a. Human values & Professional Ethics –II	2019			√
		SVUWS-206B	6 b. Familial values and Ethics	2019			√
		SVUWS 301	Gender, Science & Technology	2019	√		√
		SVUWS 302	C++ & E-Commerce	2019	√	√	√
		SVUWS 303	Human Resource planning & Development With focus on Gender Perceptions	2019	√	√	√
		SVUWS-304A	NGO Management	2019	√	√	√

		SVUWS-304B	Guidance & Counseling With Gender Perceptions.	2019	√	√	√
		SVUWS-304C	Feminist theories , Women 's,	2019			√
		SVUWS-304D	Women 's participation in Agriculture& Allied sectors	2019	√		√
		SVUWS-305A	Gender Sensitization & Training	2019	√	√	√
		SVUWS-305B	Gender Identity and Leadership	2019	√	√	√
		SVUWS-305C	Women and Governance	2019	√	√	√
		SVUWS 401	Documentation & Project Work with Gender perception	2019		√	√
		SVUWS 402	Accounting & Financial Management, Tally	2019	√	√	√
		SVUWS 403	Participatory learning, Extension & outreach programs& Advocacy with focus on women	2019	√		√
		SVUWS 404A	Legal and Human Rights of Women	2019	√		√
		SVUWS 404B	Human Resource Management With focus on Gender Perceptions	2019	√	√	√
		SVUWS 404C	Multimedia systems	2019	√	√	√
		SVUWS 404D	Reproductive Health and Family Life Education	2019	√		√
		SVUWS 405A	Technical communication and computer ethics	2019	√	√	√
		SVUWS 405B	Gender & Mass Communication	2019	√	√	√
7	Econometrics	EMT 101	MicroeconomicTheoryI	2019			
		EMT 102	MacroeconomicTheoryI	2019			
		EMT 103	MathematicalMethods	2019			
		EMT 104	PracticalI	2019			
		EMT 105	StatisticalMethods	2019			
		EMT 106	HumanValuesandProfessionalEthics-I	2019			√
		EMT 201	MicroeconomicTheoryII	2019			
		EMT 202	MacroeconomicTheoryII	2019			√
		EMT 203	BasicEconometrics	2019			
		EMT 204	Practical II	2019			
		EMT 205	MathematicalEconomics	2019			
		EMT 206	HumanValuesandProfessionalEthicsII	2019			
		EMT 301	IndianEconomy	2019			
		EMT 302	EconomicsofInsurance	2019			
		EMT 303	AdvancedEconometrics	2019			√
		EMT 304	ComputerApplicationsandData	2019			
			Analysis	2019			
		EMT 305	PublicFinance	2019			√
		EMT 306	FinancialInstitutionsandMarkets	2019			
		EMT 307	PracticalIII	2019			√
		EMT 308	IntroductiontoEconometrics	2019			
		EMT 309	IndianEconomy	2019			
		EMT 310	EconomicsofInsurance	2019			
		EMT 401	InternationalTradeandFinance	2019			
		EMT 402	EnvironmentalEconomics	2019			
		EMT 403	AppliedEconometrics	2019			
		EMT 404	OptimizationTechniquesin	2019			

		EMT 404	<i>Economics</i>	2019			
		EMT 405	<i>TimeSeriesEconometrics</i>	2019			
		EMT 406	<i>PracticalIV</i>	2019			
			<i>EnvironmentalEconomics</i>	2019			
		EMT 407	Project	2019			
		EMT 408	<i>OptimizationTechniquesin</i>	2019			
			<i>Economics</i>	2019			
		EMT 409	DataBasefortheIndianEconomy	2019			
		EMT 410	ActuarialStatistics	2019			
		101	Micro-Economic Analysis – I	2019			
		102	Macro-Economic Analysis - I	2019			
		103	Public Economics	2019			
		104	Mathematical Methods in Economics	2019			
		105	Fundamentals of Computers	2019	√	√	
		106	Human Values and Professional Ethics - I	2019			
		201	Micro-Economic Analysis – II	2019			
		202	Macro-Economic Analysis - II	2019			
		203	Federal Finance	2019			
		204	International Trade: Theory and Policy	2019			
		205	Statistical Methods in Economics	2019	√		√
		206	Human Values and Professional Ethics - II	2019			
		301	Economics of Growth and Development	2019			
		302	Indian Economy	2019			
		303	Economics of Environment	2019	√		
		304(a).	International Finance	2019			
		304(b).	Agricultural Economics	2019			
		304(c).	Demography	2019	√		
		304(d)	Human Resource Development	2019	√		
		305(a).	Urban Economics	2019	√		
		305(b).	Economics of Infrastructure	2019			
		305(c).	Economics of Insurance	2019			
		401	Rural Development	2019			
		402	Financial Institutions and Markets	2019	√		
		403	Industrial Economics	2019			
		404(a)	India's Economic Reforms	2019			
		404(b).	Andhra Pradesh Economy	2019			
		404(c).	Entrepreneurship and Skill Development	2019	√		√
		404(d).	Labour Economics	2019			
		405(a).	Women and Economic Development	2019			
		405(b).	Economics of Tourism	2019	√	√	
8	Economics	405(c).	Tribal Economy	2019			
		101	Perspectives of Educational Psychology	2019	ü		ü

		102	Educational Studies	2019	ü		ü
		103	Fundamentals of Educational Research	2019	ü	ü	ü
		104	Teacher Education	2019	ü	ü	ü
		105	Foundations of Educational Philosophy	2019	ü		ü
		106	Measurement and Evaluation	2019	ü	ü	ü
		201	Educational Planning and Management	2019	ü		ü
		202	Advanced Educational Research	2019	ü	ü	ü
		203	Guidance and Counseling	2019	ü	ü	ü
		204	Issues and Research in Teacher Education	2019	ü	ü	ü
		205	Foundations of Educational Sociology	2019	ü		ü
		206	Secondary Education	2019	ü		ü
		301	Information and Communication Technology in Education	2019	ü	ü	ü
		302	Comparative Education	2019	ü		ü
		303	Inclusive Education	2019	ü	ü	ü
		304-C	Environmental Education	2019	ü		ü
		304-D	Life Skills Education	2019	ü	ü	ü
		305-A	Teaching Strategies for Teachers	2019	ü	ü	ü
		401	Advanced Educational Technology	2019	ü		ü
		402	Psychology – Learner and Life	2019	ü	ü	ü
		403	Environmental Concerns in Secondary Education	2019	ü		ü
		404-A	Human Values and Professional Ethics	2019	ü	ü	ü
		404-B	Lifelong Education	2019	ü		ü
		405-A	Personality Development and Soft Skills	2019	ü	ü	ü
		301	Information and Communication Technology in Education	2019	ü	ü	ü
		302	Comparative Education	2019	ü		ü
		303	Inclusive Education	2019	ü	ü	ü
		304-C	Environmental Education	2019	ü		ü
		304-D	Life Skills Education	2019	ü	ü	ü
		305-A	Teaching Strategies for Teachers	2019	ü	ü	ü
		401	Advanced Educational Technology	2019	ü		ü
		402	Psychology – Learner and Life	2019	ü	ü	ü
		403	Environmental Concerns in Secondary Education	2019	ü		ü
		404-A	Human Values and Professional Ethics	2019	ü	ü	ü
		404-B	Lifelong Education	2019	ü		ü
9	Education	405-A	Personality Development and Soft Skills	2019	ü	ü	ü
		105	English Language	2019	ü		
		205	English Language Teaching	2019	ü		ü
		305 D	Indian Literature in English	2019	ü		ü
		305 (A)	Communicative English	2019			ü
		305(B):	English for Media	2019	ü		ü
		305(C):	An Introductory Course to Literature	2019	ü		
		404(A):	Translation: Theory and Practice	2019	ü		
		405(A)	Soft Skills	2019	ü		ü
				2019	√	√	√

11	Foreign Languages and Linguistics	LING-101	Language and Linguistics	2019		√			
		LING-102	Phonetics	2019		√			
		LING-103	Phonology	2019		√			
		LING-104	Morphology	2019		√			
		LING-105	Syntax	2019	√	√	√		
		LING-106	Human Values and Professional Ethics-I	2019		√			
		LING-201	Semantics	2019		√			
		LING-203	Dialectology	2019	√	√	√		
		LING-204	Field Linguistics	2019		√			
		LING-205	Language families of India and Comparative Dravidian(Phonology)	2019	√	√	√		
		LING-206	Human Values Professional Ethics-II	2019	√	√			
		LING-301	Sociolinguistics	2019	√	√			
		LING-302	Language Contact	2019	√	√	√		
		LING-303	Communication Disorders and Speech Pathology	2019	√	√	√		
		LING-304A	Psycho-linguistics	2019	√	√	√		
		LING-304B	Communication Technology	2019					
		LING-304C	Endangered Languages	2019	√	√	√		
		LING-304D	Computational Linguistics	2019	√	√	√		
		LING-304E	Applied Linguistics	2019	√	√	√		
		LING-305B	Bilingualism	2019	√	√	√		
		LING-305C	Structure of English	2019	√	√	√		
		LING-401	Language Acquisition and Child Language Development	2019	√	√	√		
		LING-404B	Language Teaching	2019	√	√	√		
		LING-404C	Translation	2019	√	√			
		LING-405A	Branches of Linguistics	2019	√	√	√		
		LING-405C	Mass Media Communication	2019	√				
		12	Hindi	HIN-101	Aadhunik Hindi Kavita	2019			
				HIN-102	Hindi Gadhya Sahitya	2019			
				HIN-103	Bhasha Vignan	2019	√		
				HIN-104	Anuvad Vignan aur Paribhashik Shabdavali	2019	√		
HIN-105	Hindi Sahitya Ka Ithihas			2019					
HIN-106	Human Values & Professional Ethics-			2019					
HIN-201	Samkaleen Hindi Kavita			2019					
HIN-202	Hindi Ka Vaicharik Sahitya			2019					
HIN-203	Hindi Bhasha			2019					
HIN-204	Prayojanmulak Hindi			2019	√		√		
HIN-205	Aadhunik Hindi Sahitya Ka Ithihas			2019					
HIN-303 D	Pravasi Sahitya			2019	√				
HIN-304	Bhasha Shikshan ke Sidhantaaur Prayog			2019	√				
HIN-305 A	Vyavharik Hindi Vyakaran			2019	√				
HIN-305 B	Hindi Sahitya ke Nirmata			2019					
HIN-401	Bhartiya Tulnatmak Sahitya			2019	√				
HIN-402	Paschatya Samiksha Shastra			2019			√		

		HIN-403 A	Anudit Bhartiya Sahitya	2019			√
		HIN-403 B	Asmitamulak Sahitya Vimarsha	2019			
		HIN-403 C	Sahitya ka Tulnatmak Adhayayan	2019	√		√
		HIN-403 D	Anusandhan ke Sidhanta aur Dristiya	2019			√
		HIN-404	Antar Jananushasnatmak Dristiyaaur And Pravidhiya	2019			
		HIN-405 A	Manak Hindi aur Nagrilipi	2019			√
		HIN-405 B	Aadhunik Hindi Sahitya ke Nirmata	2019			
		HST 205	Social and Economic History of India, 1757-1857	2019			
		HST 206	Human Values and Professional Ethics-II	2019			
		HST 301	History of South Indian,1323-1724	2019			
				2019			
		HST 302	Contemporary History of India-I	2019			
		HST 303	History of USA, 1776- 1965	2019			
		HST 304 a	History of Andhra, 1766- 1857	2019			
		HST 304 b	Theoretical Concepts of Tourism	2019	ü		
		HST 304 c	Women Studies in Modern India	2019	ü		
		HST 304 d	History of World Civilizations-1	2019			
		HST 305 a	Indian Foreign Policy: An Introduction	2019			
		HST 305 b	Constitutional History of India, 1773- 1950	2019	ü		
		HST 401	Freedom Movement in India, 1857 – 1947	2019			
		HST 402	Contemporary History of India- II	2019			
		HST 403	History ofUSA,1865-1963	2019			
		HST 404 a	History of Andhra, 1857 - 1972	2019			
		HST 404 b	Historical Application of Tourism in India	2019	ü		
		HST 404 c	Environmental History of Modern India	2019			
		HST 404 d	History of World Civilizations -II	2019			
		HST 405 a	International Relations and Organizations	2019	ü		
		HST 405 b	An Introduction to Indian Art	2019			
13	History						
		HR – 101	HUMAN RIGHTS: CONCEPTS AND THEORETICAL PERSPECTIVES	2019			
		HR – 102	HUMAN NIGHTS IN INDIA THE CONTITUIONAL AND LEGAL FRAMEWORK	2019	ü		
		HR – 103	HUMAN AND THE IMPLEMENTAION MACHINERY	2019	ü		ü
		HR – 104	RIGHTS AND THE IMPLEMENTATION MACHINERY	2019			
		HR – 105 (A)	WORKING CLASS AND HUMAN RIGHTS AND DUTIES	2019	ü		
		HR – 105 (B)	HUMAN RIGHTS EDUCATION, TEACHING AND TRAINING	2019	ü		ü
		HR – 106 (A)	HUMAN RIGHTS ACTIVISM AND ROLE OF NGOs	2019	ü		ü
		HR – 106 (B)	SOCIAL MOVEMENTS AND HUMAN RIGHTS IN INDIA	2019	ü		
		HR - 107	HUMAN MOVEMENTS AND HUMAN RIGHTS IN INDIA	2019			
		HR – 201	HUMAN RIGHTS AND INDIAN POLITY	2019			
		HR – 202	EMERGIN DIMENSIONS OF HUMAN RIGHTS	2019			

14	Human Rights and Social Development	HR – 203	HUMAN RIGHTS : THE INTERNATIONAL CONTEXT	2019	ü			
		HR – 204	RESEARCH METHODOLOGY, STATICS AND COMPUTER	2019	ü		ü	
		HR – 205 (A)	HUMAN RIGHTS – THE SOCIO ECONOMIC CONTEXT	2019				
		HR – 205 (B)	SOCIETAL PROBLEMS OF HUMAN RIGHTS IN INDIA	2019				
		HR – 206 (A)	HUMAN RIGHTS AND CRIMINAL JUSTICE SYSTEM	2019	ü			ü
		HR – 206 (B)	MEDIA AND HUMAN RIGHTS	2019	ü			ü
		HR – 301	SOCIAL MOVEMENTS AND HUMAN RIGHTS AND DUTIES	2019				
		HR – 302	SCIENCE, TECHNOLOGY, HUMAN RIGHTS AND DUTIES	2019	ü			
		HR – 303 (A)	HUMNA RIGHTS AND DUTIE – ADVOCACY AND EXTENSION WORK AND VIVA – VOCE	2019	ü			
		HR – 303 (B)	SOICALLY / ECONOMICALLY DISADVANTAGED PEOPLE AND HUMAN RIGHS AND DUTIES	2019				
		HR – 303 (C)	HUMAN DUTIES AND RESPONSIBILITIES	2019				
		HR – 303 (D)	CHILDREN AND HUMAN RIGHTS AND DUTIES	2019				
		HR – 304	SOFT SKILLS	2019	ü			ü
		HR – 305 (A)	HISTROICAL AND PHILOSOPHICAL PERPECTIVS AND HUMAN RIGHTS	2019				
		HR – 305 (B)	HUMAN RIGHTS AND DUTIES IN INDIA	2019	ü			
		HR – 401	human rights in andhra pradesh	2019				
		HR – 402	development, trade and hyuman rights	2019				
		HR – 403 (A)	international, humanitarian and refugee laws	2019				
		HR – 403 (B)	environment and human rights and duties	2019	ü			
		HR – 403 (C)	human rights and criminal justice system	2019				
15	Law	LAW-101	Mass Media Law	2019	ü	ü	ü	
		LAW-102	Public Utilities Law	2019		ü	ü	
		LAW103	Law and Social Transformation in India	2019	ü	ü	ü	
		LAW-104	Indian Constitutional Law, The New Challenges.	2019	ü	ü	ü	
		LAW-201	Union State Finance Relations	2019	ü	ü	ü	
		LAW-202	Constitutionalism, Pluralism and Federalism	2019	ü	ü	ü	
		LAW-203	Judicial Process	2019	ü	ü	ü	
		LAW-204	Legal Education and Research Methodology	2019	ü	ü	ü	
		LAW-301	Human Rights	2019	ü	ü	ü	
		LAW-302	National Security, Public Order and Rule of Law	2019	ü	ü	ü	
		LAW-303	Practical Training	2019	ü	ü	ü	
		LAW-304 a	Environment Protection and the Law	2019	ü	ü	ü	
		LAW-304b	Intellectual Property Rights Law	2019	ü	ü	ü	
		LAW-305 a	Cyber Crimes and Law	2019	ü	ü	ü	
		LAW305 b	Evolution and Concept of ADR	2019	ü	ü	ü	
		LAW401	Dissertation and Viva- Voce	2019	ü	ü	ü	
		LAW-402 a	Law and Consumer Protection	2019	ü	ü	ü	
LAW -402 b	International Human Rights (MOOC/Online)	2019	ü	ü	ü			

16	Library and Information Science	Lis-101	Foundation of Library and Information Science	2019			ü	
		Lis-102	Knowledge Organization : Classification Theory	2019	ü		ü	
		Lis-103	Knowledge Organization : Classification Practice	2019	ü		ü	
		Lis-104	Knowledge Management	2019		ü	ü	
		Lis-105	Introduction to Information Technology	2019	ü		ü	
		Lis-106	Human Values and Professional Ethics – I	2019			ü	
		Lis-201	Information Sources and Services	2019			ü	
		Lis-202	Knowledge Organization : Cataloguing Theory	2019	ü		ü	
		Lis-203	Knowledge Organization : Cataloguing Practice	2019	ü		ü	
		Lis-204	Meta Data Standards – Practice	2019	ü		ü	
		Lis-205	Library Management	2019	ü		ü	
		Lis-206	Human Values and Professional Ethics – II	2019			ü	
		Lis-301	Information Processing and Retrieval Theory	2019	ü		ü	
		Lis-302	Library Automation and Digital Library	2019	ü		ü	
		Lis-303	Search and search strategies	2019			ü	
		Lis-304A	User Studies	2019				
		Lis-304B	Internship	2019	ü		ü	
		Lis-304C	Academic Library System	2019	ü		ü	
		Lis-304D	Special Library System	2019	ü		ü	
		Lis-305A	Information Literacy	2019			ü	
		Lis-305B	Information and Communication	2019			ü	
		Lis-401	Research Methodology	2019			ü	
		Lis-402	Software for Libraries-Practice	2019	ü		ü	
		Lis-403	Dessertation/Project Work	2019	ü		ü	
		Lis-404A	Management of Information System	2019			ü	
		Lis-404B	Museums and Archives	2019				
		Lis-404C	Information Processing and Retrieval:UDC and Indexing Practice	2019	ü		ü	
		Lis-404 D	Marketing of Information Products and Services	2019			ü	
		Lis-405 A	Information Systems and Programmes	2019			ü	
		Lis-405B	Technical Writting	2019			ü	
		17	Mass Communication & Journalism					
		18	Performing Arts	PAM-105 (P)	Compulsory Foundation in Music -1	2019		
PAM-105 (P)	Compulsory Foundation in Music -1			2019			ü	
PA-M 204 (P)	Vilambakala Kritis			2019	ü		ü	
PA-M 205 (p)	Compulsory Foundation in Music -2			2019			ü	
PA-M 302	Compositions in Rare ragas			2019	ü		ü	
PA-M 303	Concert			2019	ü	ü	ü	

		PA-M 402	Ragam Tanam Pallavi	2019	ü		ü
		PA-M 403	Project work	2019	ü		ü
		PA-M 404A	Manodharma Sangeetha	2019	ü		ü
		PA-M 404C	Compositions of Dance Repertoire	2019	ü	ü	ü
19	Philosophy	PHL- 101	Logic: Indian and Western	2019			ü
		PHL -102	Epistemology – Indian	2019			
		PHL -103	Classical Indian Philosophy	2019	ü		ü
		PHL -104	Problems in Metaphysics	2019			
		PHL -105	Western Philosophy: Greek and Medieval	2019			
		PHL -106	Human Values and Professional Ethics -I	2019			
		PHL- 201	Ethics – Indian	2019	ü		
		PHL- 202	Ethics – Western	2019	ü		
		PHL- 203 - A	Modern Indian Thought	2019			
		PHL- 203 - B	Modern Western Philosophy	2019			
		PHL- 203 - C	Nyaya Sutras	2019			ü
		PHL- 204	Philosophy of Education	2019			
		PHL- 205	Human Values and Professional Ethics -II	2019			
		PHL- 301	Social and Political Philosophy	2019	ü		ü
		PHL- 302	Analytical Philosophy	2019	ü		
		PHL- 303	Philosophy of Vedanta	2019	ü		
		PHL- 304 - A	Philosophical Approach to Gandhi	2019			
		PHL- 304 - B	Philosophy of B.R Ambedkar	2019	ü		
		PHL- 304 - C	Philosophy of Religion	2019			
		PHL- 305- A	Philosophy of Yoga	2019		ü	ü
		PHL- 305- B	Eco - Philosophy	2019			ü
		PHL- 401	Phenomenology and Existentialism	2019			ü
		PHL- 402	Comparative Religion	2019			ü
		PHL- 403	Sri Vaishnavism	2019			
		PHL- 404 - A	Philosophy of Peace	2019	ü		ü
		PHL- 404 - B	Research Methodology and Computer Applications	2019	ü		ü
		PHL- 404 - C	Introduction to Philosophy of Mind	2019			
		PHL- 405 - A	Sri Venkateswara Studies	2019			
PHL- 405 - B	Philosophy of Value Education	2019	ü				
		CC-101	History, Principles and foundations of Physical Education	2019			
		CC-102	Anatomy and Physiology	2019			
		CC-103	Educational Technology and Methods of Teaching in Physical Education	2019		ü	ü
		EC-111	Communication & Soft skills	2019			
		EC-112	Olympic Movement	2019			ü
		PC-121	Track and Field (Running Events), *Gymnastics/*Swimming (* Any one)	2019			ü
		PC-122	Football, Tennis, Throwball	2019		ü	ü
		PC-123	Badminton, Kho-Kho, Shooting	2019		ü	ü

PC-124	Mass Demonstration Activities:	2019			
	Flag Hoisting, March past,				
	Calisthenics, Lezium				
	Dumb-bells, Kolatam, Aerobics				
	Wands, Hoops, Pole Drill, Folk Songs & Patriotic Songs				
CC-201	Kinesiology and Biomechanics	2019	ü	ü	
CC-202	Health Education and Environmental Studies	2019		ü	
CC-203	Measurement and Evaluation in Physical Education	2019		ü	
EC-211	Computer Applications in Physical Education	2019			
EC-212	Recreation and Leisure Management	2019			
PC-221	Track and Field	2019			
	(Jumping Events)				
	* Gymnastics/*Swimming				ü
	(* Any one)				ü
PC-222	Yoga, Ball Badminton, Kabaddi	2019			ü
PC-223	Hockey, Handball, Cricket	2019			ü
TP-231	Teaching Practice	2019			ü
	(Class room and Outdoor)				
	(4 internal and 1 External in class room and outdoor)				
PSPA 101	Constitution Making - Indian Experience	2019	ü	ü	ü
PSPA 105 (b)	Indian Political Thought	2019	ü	ü	
PSPA 103	Modern Political Analysis	2019	ü	ü	ü
PSPA105 (c)	Public Relations& Mass Communication	2019	ü	ü	ü
PSPA106 (a)	Dynamics of Public Administration	2019	ü	ü	ü
PSPA106 (b)	Globalization and Indian Political Economy	2019	ü	ü	ü
PSPA 201	Administrative Theories	2019		ü	ü
PSPA 202	Research Methodology	2019	ü	ü	ü
PSPA 203	Indian Government and Politics	2019	ü	ü	ü
PSPA 204	Public Policy	2019	ü	ü	ü
PSPA205 (a)	Indian National Movement	2019	ü	ü	ü
PSPA205 (b)	Public Enterprises in India	2019	ü	ü	ü
PSPA 205 (c)	Administrative Techniques	2019	ü	ü	ü
PSPA 206 (b)	International Administration	2019	ü		ü
PS303(a)	Good Governance and Information Technology	2019	ü	ü	ü
PS 304	Personality Development and Employment	2019	ü	ü	ü
PS305(a)	Social Movements in India	2019	ü		
PA 301	Public Personnel Administration	2019	ü		ü
PA303(b)	Issues in Indian Administration	2019	ü		ü
PA303(d)	Political Dynamics	2019		ü	ü
PA 305(b)	Indian Polity and Governance	2019	ü	ü	ü
PS 401	India's Foreign Policy-Continuity,	2019	ü		ü
	Changes and Emerging Challenges	2019			
PS 402	Center-State Relations in India	2019	ü		ü
PS 403(b)	E-Governance	2019	ü	ü	ü

21	Political Science & Public Administration	PS 405(b)	Women and Politics	2019	ü	ü	ü		
		PA 401	Human Resource Management	2019	ü	ü	ü		
		PA 402	Financial Administration	2019	ü	ü	ü		
		PA 403(c)	Disaster Management	2019	ü	ü	ü		
		PA 403(d)	Office Management	2019	ü	ü	ü		
		PA 405(a)	Indian Constitution	2019	ü				
		PA 405(b)	Banking Management	2019	ü	ü	ü		
22	Population Studies	PSC-101	Population Characteristics and Theories	2019	ü		ü		
		PSC-102	Fertility	2019	ü		ü		
		PSC-103	Mortality	2019	ü		ü		
		PSC-104	Sources, Evaluation and Adjustment of Data	2019	ü	ü	ü		
		PSC-105	Population Education and Extension	2019	ü		ü		
		PSC-106	Human Values & Professional Ethics-I	2019			ü		
		PSC - 201	Migration and Multi Regional Demography	2019			ü		
		PSC - 202	N.G.O Management	2019	ü	ü	ü		
		PSC - 203	Statistical Methods	2019	ü	ü	ü		
		PSC - 204	Population Sociology	2019	ü		ü		
		PSC – 205	Population and Sustainable Development	2019	ü		ü		
		PSC - 206	Human Values and Professional Ethics -II	2019			ü		
		PSC - 301	Population Geography	2019	ü	ü	ü		
		PSC - 302	Research Methodology	2019	ü	ü	ü		
		PSC - 303	Community Health	2019	ü		ü		
		PSC – 304 A	Population Psychology	2019	ü		ü		
		PSC – 304 B	Population Policies and Programmes	2019	ü		ü		
		PSC – 304 C	Georontology	2019	ü	ü	ü		
		PSC – 304 D	Population and Sustainable Developemnt	2019	ü				
		PSC – 305 A	Principles of Population Studies	2019	ü				
		PSC – 305 B	Population, Society and Environment	2019	ü		ü		
		PSC - 401	Communication For Family Welfare Programmes	2019	ü		ü		
		PSC - 402	Reproductive Health and Adolescent Issues	2019	ü		ü		
		PSC - 403	Population Growth and Development	2019	ü				
		PSC – 404 A	Field Work Practice and Dissertation	2019	ü	ü	ü		
		PSC – 404 B	Demography of Andhra Pradesh	2019	ü				
		PSC – 404 C	Social Work in Industry and Human Resource Management	2019	ü		ü		
		PSC – 404 D	Health Economics	2019	ü		ü		
		PSC – 405 A	Rural, Urban, Tribal Development	2019	ü		ü		
		PSC – 405 B	Social policies and planning	2019	ü		ü		
				MSW-101	Sociology for Social Work	2019	ü		--
				MSW-102	Human growth and Personality Development	2019	ü		ü
MSW-103	Social Work Profession & Field Work Orientation-1			2019	ü	ü	ü		
MSW-104	Social Work practice with Individuals & Groups			2019	ü		ü		
MSW-105	Social Work Practicum-I			2019			ü		
MSW-106	Human Values & Professional Ethics-I			2019			ü		
MSW - 201	Social Work Profession and Field Work Orientation-II			2019	ü	ü	ü		
MSW - 202	Social Work Practice with Communities			2019	ü	ü	ü		
MSW - 203	Social Action and Social Legislation for Social Work Practice			2019	ü		ü		

24	Sociology	MASO-102	Sociological Research methods	2019	ü	ü	
		MASO-104	Participatory Research	2019	ü	ü	
		MASO-201	Applied Sociology	2019	ü	ü	
		MASO-203	Rural Sociology and Development	2019	ü	ü	
		MASO-204	Extension Work	2019	ü	ü	
		MASO-205	Environmental Sociology	2019	ü	ü	
		MASO-301	Medical Sociology	2019	ü	ü	
		MASO-303	Field Work and Extention Work (Village Placement)	2019	ü	ü	
		MASO-304-A	Human Rights	2019	ü	ü	
		MASO-304-C	Gerontology	2019	ü	ü	
		MASO-305-A	Social Psychology and Personality Development	2019	ü	ü	
		MASO-401	Criminology	2019	ü	ü	
		MASO-402	Industrial Dynamics	2019	ü	ü	
		MASO-403	Field Work	2019	ü	ü	
		MASO-404-A	Social Welfare and Welfare Adminstration	2019	ü	ü	
		MASO-405	Globalisation and Educational Pursuits	2019	ü	ü	
25	Tamil	TML 101	Modern Literature	2019	ü		
		TML 104	Principle of Literary Criticism - I	2019	ü		
		TML 201	Modern Literature - II	2019	ü		
		TML 204 A	Feminism	2019	ü		
		TML 303	General Linguistics	2019	ü		
		TML 304D	Folk Arts in Tamil	2019			ü
		TML 403	Comparative grammar of Dravidian Languages and Folk Festivals	2019	ü		
		TML 404D	Folk Festivals	2019			ü
26	Telugu Studies	102	General Linguistics	2019	ü		
		105	Folk Literature	2019	ü		ü
		303	Journalism	2019	ü		
		304A	Fiction: Novel & Short Stories	2019			
		305b	Adhunika Moulifikamsalu	2019	ü		
		202	Dialectology	2019			ü
		205	Folk Arts	2019			ü
		404d	Comparative Literature	2019	ü		
		405a	Folk Lore	2019	ü		ü
27	Urdu	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2019	ü		ü
		URD 304 D	Urdu Computer	2019	ü	ü	ü
		URD 404 A	Urdu Tarjuma Nigari	2019	ü		ü
		URD 404 D	Urdu Tarseel o Iblag ke Zaraye	2019	ü		ü
		ANO : 101	Introduction to Social Cultural Anthropology	2019	✓		✓
		ANO : 102	Introduction to Biological Anthropology	2019	✓		✓
		ANO-103	Introduction to Archaeological Anthropology	2019	✓		✓
		ANO-104P	Somatometry & Somatoscopy	2019	✓		✓

ANO 105p	Archaeological Anthropology	2019	✓		✓	
ANO 106	Economic and Political Anthropology	2019	✓		✓	
ANO 107	Human Values and Professional Ethics -I	2019	✓		✓	
ANO 201	Comparative Ethnography and Indian Anthropology	2019	✓		✓	
ANO 202	Principals of Genetics	2019	✓		✓	
ANO 203	Research Methods in Anthropology	2019	✓		✓	
ANO 204P	Craniology and Craniometry	2019	✓		✓	
ANO205P	Doing Ethnography	2019	✓		✓	
ANO206	Prehistoric India	2019	✓		✓	
ANO 207	Human Values and Professional Ethics -II	2019	✓		✓	
ANB 301	Human Evolution and Fossil Evidence	2019	✓		✓	
ANB 302	Human Genetics	2019	✓		✓	
ANB 303P	Human Osteology and Osteometry	2019	✓		✓	
ANB 304P	Dermatoglyphics	2019	✓		✓	
ANB 305	Anthropological Demography	2019	✓		✓	
ANB 306	Biostatistics and Computer Applications	2019	✓	✓	✓	
ANB 307	Forensic Anthropology	2019	✓	✓	✓	
ANB 308	Palaeoanthropology	2019	✓		✓	
ANB 401	Biological Anthropology	2019	✓		✓	
ANB-402	Human Population Genetics	2019	✓		✓	
ANB-403P	Advanced Biological Anthropology	2019	✓		✓	
ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2019	✓		✓	
ANB -405	Human Growth, Physique and Nutrition	2019	✓		✓	
ANB 406	Applied Biological Anthropology	2019	✓	✓	✓	
ANB 407	Medical Genetics	2019	✓	✓	✓	
ANB-408	Epidemiology	2019	✓	✓	✓	
ANB -409	Human Ecology	2019	✓		✓	
ANS 301	Theories of Culture	2019	✓		✓	
ANS 302	Social Anthropology of Complex Societies	2019	✓		✓	
ANS 303P	Participatory of Research methods in Development Process	2019	✓		✓	
ANS 304P	Non-Governmental Organizations and Extension studies	2019	✓		✓	
ANS 305	Ecological Anthropology	2019	✓		✓	
ANS 306	Applied Anthropology- Indigenous Communities	2019	✓		✓	
ANS 307	Anthropology of Religion Scared complexes in India	2019	✓		✓	
ANS 308	Anthropology and Career Promotion	2019	✓		✓	
ANS 401	Structural Anthropology	2019	✓		✓	
ANS-402	Medical Anthropology	2019	✓	✓	✓	
ANS-403P	Computer Applications	2019	✓	✓	✓	
ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2019	✓		✓	
ANS -405	Developmental Anthropology	2019	✓		✓	
ANS 406	Culture and Management	2019	✓		✓	
ANS 407	Anthropology of Displaced Populations	2019	✓		✓	
ANS-408	Visual Anthropology	2019	✓		✓	
ANS -409	Urban Anthropology	2019	✓		✓	
28	Anthropology					
	101	Biochemical and Biophysical methods	2019	ü	ü	ü
	102	Molecular Physiology and community nutrition	2019	ü	ü	
	103P	Practical related to Biochemical Preparations and Analysis	2019	ü	ü	ü

		104P	Practical related to Analytical methods	2019	ü	ü	ü
		105	Cell and Biomolecules	2019		ü	
		106	Human values and Professional ethics-1	2019	ü		
		201	Energy metabolism	2019		ü	
		202	Metabolism of Nitrogen based molecules	2019		ü	
		203P	Practical related to Enzymology	2019	ü	ü	ü
		204P	Practical related to Molecular Biology	2019	ü	ü	ü
		205	Human values and Professional ethics-11	2019	ü		
		206	Enzymology	2019	ü	ü	ü
		301	Microbial Biochemistry and Genetics	2019	ü	ü	ü
		302	Molecular Biology	2019	ü	ü	ü
		303P	Practical related to Microbiology	2019	ü	ü	ü
		304P	Practical related to Clinical Biochemical Analysis	2019	ü	ü	ü
		305GE	a) Molecular Endocrinology	2019	ü	ü	
		305GE	b) Clinical Biochemistry	2019	ü	ü	ü
		305GE	c) Cell and Developmental Biology	2019		ü	
		306OE	a) General Biochemistry	2019	ü	ü	
		306OE	b) Environmental Biochemistry	2019	ü	ü	ü
		306OE	c) Experimental aspects related to analytical methods	2019	ü	ü	ü
		401	Genetic Engineering	2019	ü	ü	ü
		402	Technical Writing, Biostatistics and Bioinformatics	2019	ü	ü	ü
		403P	Practical related to Immunology and Hematology	2019	ü	ü	ü
		404P:	Practical/Project work	2019	ü	ü	ü
		405 GE	a) Immunology	2019	ü		
		405 GE	b) Applied Biochemistry	2019	ü	ü	ü
		405GE	c) Plant Biochemistry	2019	ü	ü	
		406 OE	a) Research Methodology	2019	ü	ü	ü
		406 OE	b) Biochemistry of diseases	2019	ü	ü	ü
29	Biochemistry	406 OE	c) Nutritional Biochemistry	2019	ü	ü	ü
		Core 1	Biochemical and Biophysical methods	2019	ü	ü	ü
		Core 2	Molecular Physiology and community nutrition	2019	ü	ü	
		Core 3	Practical related to Biochemical Preparations and Analysis	2019	ü	ü	ü
		Core 4	Practical related to Analytical methods	2019	ü	ü	ü
		Compulsory Foundation	Cell and Biomolecules	2019		ü	
		Elective foundation	Human values and Professional ethics-I	2019	ü		
		Core 1	Energy metabolism	2019		ü	
		Core 2	Metabolism of Nitrogen based molecules	2019		ü	
		Core 3	Practical related to Enzymology	2019	ü	ü	ü
		Core 4	Practical related to Molecular Biology	2019	ü	ü	ü
		Compulsory Foundation	Enzymology	2019	ü	ü	ü
		Elective foundation	Human values and Professional ethics-II	2019	ü		
		Core 1	Microbial Biochemistry and Genetics	2019	ü	ü	ü
		Core 2	Immunology	2019	ü		
		Core 3	Practical related to Microbiology	2019	ü	ü	ü
		Core 4	Practical related to Immunology	2019	ü	ü	ü
		Generic Elective	a) Molecular Biology	2019	ü	ü	ü

		Generic Elective	b)Molecular Endocrinology	2019	ü	ü	
		Generic Elective	c) Cell and Developmental Biology	2019		ü	
		Open Elective	a) Basics of Immunology	2019	ü		
		Open Elective	b) Immunotechniques	2019	ü	ü	ü
		Core 1	Genetic Engineering	2019	ü	ü	ü
		Core 2	Technical Writing, Biostatistics and Bioinformatics	2019	ü	ü	ü
		Core 3	Practical related to Clinical immunology, biostatistics and bioinformatics	2019	ü	ü	ü
		Core 4	Practical/Project work	2019	ü	ü	ü
		Generic Elective	a) Clinical Immunology	2019	ü	ü	ü
		Generic Elective	b) Applied and molecular	2019	ü	ü	ü
		Generic Elective	c) Immuno pharmacology	2019	ü	ü	ü
	Immunotechnology	OE	a) Research Methodology	2019	ü	ü	ü
		OE	b) Immunological diseases and therapeutics	2019	ü	ü	ü
		BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2019-2020			ü
		BOT-102	Taxonomy of Angiosperms	2019-2020	ü		ü
		BOT-103	Microbiology	2019-2020	ü		ü
		BOT-104	Human Values and Professional Ethics - I	2019-2020		ü	
		BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2019-2020	ü	ü	ü
		BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2019-2020	ü	ü	ü
		BOT-201	Plant Ecology	2019-2020	ü	ü	ü
		BOT-202	Plant Biochemistry and Plant Physiology	2019-2020	ü		ü
		BOT-203	Plant Development and Reproduction	2019-2020	ü		ü
		BOT-204	Human Values and Professional Ethics - II	2019-2020		ü	
		BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2019-2020	ü	ü	ü
		BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2019-2020	ü	ü	ü
		BOT-301	Molecular Biology and Techniques	2019-2020	ü	ü	ü
		BOT-302	Biodiversity and Conservation	2019-2020	ü		ü
		BOT-303IE	Biosystematics	2019-2020	ü		ü
		BOT-304 IE	Molecular Plant Pathology	2019-2020	ü	ü	ü
		BOT-306 IE	Computer Applications and Bioinformatics	2019-2020	ü	ü	ü
		BOT-307 EE	Plants and Human Welfare	2019-2020	ü	ü	
		BOT-308 EE	Organic Farming and Mushroom Cultivation	2019-2020	ü	ü	ü
		Bot-309 EE	Gardening and Nursery Techniques	2019-2020	ü	ü	ü
		BOT-305P	Practical-I Molecular Biology and Techniques; Biodiversity and Conservation	2019-2020	ü	ü	ü
		BOT-306P	Practical – II Biosystematics / Molecular Plant Pathology / Computer Applications	2019-2020	ü	ü	ü
		BOT-401	Molecular Genetics, Genomics and Proteomics	2019-2020	ü		
		BOT-402	Plant Biotechnology	2019-2020	ü	ü	ü
		BOT-403IE	Molecular Plant Physiology	2019-2020	ü	ü	ü
		BOT-404IE	Horticulture and Agriculture Biology	2019-2020	ü	ü	ü

30	Botany	BOT-405IE	Ethnobotany and Phytomedicine	2019-2020	ü	ü	ü
		Practical-I	Molecular Genetics, Genomics and Proteomics & Plant Biotechnology	2019-2020		ü	ü
		Practical -II	Molecular Plant Physiology / Horticulture and Agriculture Biology / Ethnobotany & Phytomedicine	2019-2020		ü	ü
31	Biotechnology	BTH 101	Structure and Functions of Biomolecules	2019	✓		
		BTH 102	Advanced Tools and Techniques	2019	✓		
		BTH 103P		2019	✓		✓
		BTH 104P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2019	✓		✓
		BTH 105	Microbiology and Immunology	2019	✓		
		BTH 106	Human Values and Professional Ethics-I	2019			
		BTH 201	Enzymes and Intermediary Metabolism	2019	✓		
		BTH 202	Molecular Biology	2019	✓		
		BTH 203P	Practicals related to Enzymology & Molecular Biology	2019	✓		✓
		BTH 204P	Practicals related to Biostatistics and Bioinformatics	2019	✓		✓
		BTH 205	Research methodology, Biostatistics and Bioinformatics	2019	✓		
		BTH 206	Human Values and Professional Ethics-II	2019			
		BTH 301	Genetic Engineering	2019	✓		
		BTH 302	Cell and Tissue Culture	2019	✓		
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2019	✓		✓
		BTH 304	a) Bioprocess Engineering and Technology	2019	✓		✓
		BTH 304	b) Legal, Ethical and Implications of Biotechnology	2019	✓		
		BTH 304	c) Food and Industrial Biotechnology	2019	✓		✓
		BTH 305	a) Plant Tissue Culture	2019	✓		
		BTH 305	b) Bioethics	2019	✓		
		BTH 305	c) Bioinformatics	2019	✓		✓
		BTH 401	Environmental Biotechnology	2019	✓	✓	✓
		BTH 402	Plant Biotechnology	2019	✓		
		BTH 403	Project work	2019	✓		✓
		BTH 404	a) Pharmaceutical Biotechnology	2019	✓		
			b) Animal Biotechnology	2019	✓		
			c) Applications of Biotechnology	2019	✓		
			d) Practical Related to Environmental Biotechnology & Plant Biotechnology	2019	✓		
		BTH 405	a) Tools in Biotechnology	2019	✓		
		BTH 405	b) Immunology	2019	✓		✓
		BTH 405	c) Applications of Biotechnology	2019	✓		

		CHE-101	Inorganic Chemistry- I	2019			
		CHE-102	Organic Chemistry I	2019			
		CHE-103	Physical Chemistry- I	2019			
		CHE-104	Inorganic Practical- I	2019			
		CHE-105	Organic Practical-I	2019			
		CHE-106	Physical Practical I	2019			
		CHE-107	General Chemistry-I	2019			
		CHE-108	Human Values and Professional Ethics – I	2019			
		CHE-201	Inorganic Chemistry- II	2019			
		CHE-202	Organic Chemistry -II	2019			
		CHE-203	Physical Chemistry- II	2019			
		CHE-204	Inorganic Practical- II	2019			
		CHE-205	Organic Practical-II	2019			
		CHE-206	Physical Practical -II	2019			
		CHE-207	General Chemistry-II	2019			
		CHE-208	Human Values and Professional Ethics – II	2019			
		CHE-AC-301	Inorganic Spectroscopy & Thermal Methods of Analysis	2019	ü	ü	ü
		CHE-AC -302	Organic Spectroscopy	2019	ü	ü	ü
		CHE-AC-303	Classical Methods of Analysis	2019	ü	ü	ü
		CHE-AC-304	Instrumental Methods of Analysis-I	2019	ü	ü	ü
		CHE- 305	(a) Organic Chemistry III	2019			
				2019			
			(b)Physical Chemistry III	2019			
				2019			
			(c)Green Chemistry	2019			
		CHE- 306	(a) Spectral Techniques	2019	ü	ü	ü
			(b) Chromatographic Techniques	2019	ü	ü	ü
		CHE-AC-401	Quality control and General principles	2019			
		CHE-AC-402	Instrumental Methods of Analysis	2019			
		CHE-AC-403	Instrumental Methods of Analysis-II	2019			
		CHE-AC-404	Project work	2019			ü
			(a) Applied and Environmental aspects	2019			
		CHE-405	(b) Bioinorganic, Bioorganic & Biophysical Chemistry	2019			ü
			(c) Chemistry of Nanomaterials & Functional materials	2019		ü	
		CHE-406	(a)Drug Chemistry	2019	ü	ü	
			(b) Electroanalytical Techniques	2019		ü	ü
32	Chemistry						
		ENV-101	Ecology and Environment	2019	ü		
		ENV -102	Environmental Chemistry	2019	ü		
		ENV -103	Practical-I	2019	ü	ü	ü
		ENV -104	Practical-II	2019	ü	ü	ü
		ENV -105	Environmental Toxicology and Public Health	2019	ü		
		ENV -106	Human Values and Professional Ethics – I	2019			
		ENV-201	Energy and Environment	2019	ü		ü
		ENV-202	Environmental Pollution	2019	ü		
		ENV-203	Practical-I	2019	ü	ü	ü

33	Environmental Sciences	ENV-204	Practical-II	2019	ü	ü	ü		
		ENV-205	Instrumental Techniques and applications	2019	ü		ü		
		ENV-206	Human Values and Professional Ethics – II	2019					
		ENV-301	Waste Treatment an Management	2019	ü		ü		
		ENV-302	Environmental Impact Assessment, Audit and Economics	2019	ü		ü		
		ENV-303	Practical-I	2019	ü	ü	ü		
		ENV-304	Practical-II	2019	ü	ü	ü		
		ENV-305 A	Eco Tourism and Eco- restoration	2019	ü		ü		
		ENV-305 B	Biodiversity conservation and Management	2019	ü		ü		
		ENV-305 C	Statistics, Computer Applications and Modeling	2019	ü		ü		
		ENV-306 A	Natural Resources Conservation	2019	ü				
		ENV-306 B	Global Environmental Issues	2019	ü				
		ENV-401	Water Resources and Watershed Management	2019	ü		ü		
		ENV-402	Remote Sensing and GIS	2019	ü	ü	ü		
		ENV-403	Practical-I	2019	ü	ü	ü		
		ENV-404	Project Work and Comprehensive Viva-Voce	2019	ü	ü	ü		
		ENV-405 A	Disaster Mitigation and Management	2019	ü		ü		
		ENV-405B	Environmental Laws, Policies and Legislation	2019	ü				
		ENV-405 C	Environmental Education	2019	ü				
		ENV-406 A	Forest Resources and Management	2019	ü				
		ENV-406 B	Environmental Management and Sustainable Development	2019	ü				
				AQC 101	Concepts of Aquatic Ecology	2019			
				AQC 102	Systematics And External Anatomy of Cultivable Organisms	2019			
				AQC 103	Identification and Morphology of Cultivable Organisms	2019			
		AQC 104	Fish Nutrition	2019					
		AQC 105	Fish Nutrition and Water Quality Management	2019					
		AQC 106	Human Values and Professional Ethics – I	2019					
		AQC 201	Principles of Aquaculture	2019					
		AQC 202	Physiology of Cultivable Organisms	2019					
		AQC 203	Soil and Water Characteristics	2019					
		AQC 204	Physiology of Fin Fish and Shell Fish	2019					
		AQC 205	Fresh Water Aquaculture	2019					
		AQC 206	Human Values and Professional Ethics - II	2019					
		AQC 301	Microbiology and Fish Pathology	2019					
		AQC 302	Fish Immunology	2019					
		AQC 303	Microbiology and Fish Diseases	2019					
		AQC 304	Cell Biology, Genetics and Immunology	2019					
		AQC 305	a) Cell Biology and Genetics	2019					
		AQC 306	b) Fishery Economics, Extension and Environmental Management	2019					
		AQC 307	c) Coastal Aquaculture	2019					
		AQC 308	a) Fish Processing Technology	2019					
		AQC 309	b) Pollution and Toxicology	2019					
		AQC 310	c) Environmental Monitoring and Biodeterioration	2019		√			
		AQC 401	Aquaculture Biotechnology	2019		√			
		AQC 402	Essentials of Biochemistry	2019					
		AQC 403	Biotechnology and Biostatistics	2019					

34	Fishery Sciences & Aquaculture	AQC 404	Project Work	2019			
		AQC 405	a) Computer Applications, Information Technology and Biostatistics in Aquaculture	2019		√	
			AQC405B: Aquaculture Engineering	2019			
		AQC 406	b) Fish Breeding and Hatchery Management	2019			
		AQC 407	c) Limnology	2019		√	
		AQC 408	a) Bioinformatics in Aquaculture	2019			
		AQC 409	b) General Principles and Practices of Aquaculture	2019			
35	Geography	GEG-101	Geomorphology	2019	√	√	√
		GEG-102	Economic Resource Studies	2019	√		√
		GEG-103P	Maps Scales and Map Projections	2019		√	√
		GEG-104P	Terrain Mapping Techniques	2019		√	√
		GEG-105	Advanced Cartography	2019		√	√
		GEG-106	Human Values and Professional Ethics-I	2019			√
		GEG-201	Climatology and Oceanography	2019	√	√	√
		GEG-202	Principles of Remote Sensing	2019	√		√
		GEG-203P	Interpretation of topographical and Weather Maps	2019	√	√	√
		GEG-204P	Techniques of Mapping and Map Analysis	2019		√	√
		GEG-205	Geographical Thought	2019	√		
		GEG-206	Human Values and Professional Ethics-II	2019			
		GEG-301	Urban Studies	2019		√	√
		GEG-302	Geographical Information System(G.I.S)	2019	√	√	
		GEG-303P	Geographical Information System(G.I.S)	2019	√	√	
		GEG-304P	Statistical Techniques	2019			
		GEG-305A	Agricultural Studies	2019	√		
		GEG-305B	Regional Geography of India with special reference to Andhra Pradesh	2019			
		GEG-305C	Disaster Management Studies	2019			
		GEG-306A	Regional Geography of Andhra Pradesh	2019			
		GEG-306B	Geographical information System(GIS)and Global Positioning System(GPS) applications	2019	√	√	√
		GEG-401	Regional Planning	2019			√
		GEG-402	Advanced Remote Sensing	2019			
		GEG-403P	Research Techniques	2019			
		GEG-404P	Remote Sensing Applications	2019	√		
		GEG-405A	Water and Soil Resource Management	2019			√
		GEG-405B	Environmental Studies	2019			
		GEG-405C	Geography for Research Extension and industry	2019			
		GEG-406A	Regional Geography of India	2019			
		GEG-406B	Remote sensing Principles and Applications	2019			√
		GEO-101	Geomorphology	2019	√		
		GEO-102	Crystallography & Mineralogy	2019		√	√
		GEO-103P	Crystallography & Mineralogy	2019		√	√
		GEO-104P	Geomorphology & Paleontology	2019	√		
		GEO-105	Stratigraphy & Paleontology	2019	√		

		GEO-106	Human Values & Professional Ethics-I	2019			
		GEO-201	Structural Geology and Geotectonics	2019			√
		GEO-202	Remote Sensing and GIS	2019			√
		GEO-203P	Structural Geology & Sedimentology	2019		√	
		GEO-204P	Remote Sensing and GIS	2019			√
		GEO-205	Sedimentology	2019	√		
		GEO-206	Human Values & Professional Ethics-II	2019			
		GEO-301	Igneous Petrology	2019	√	√	√
		GEO-302	Metamorphic Petrology	2019	√	√	
		GEO-303P	Petrology	2019	√	√	
		GEO-304P	Geochemistry	2019	√		
		GEO-305	Geochemistry and Thermodynamics	2019			
		GEO-306	Computer Applications and Geostatistics	2019			
		GEO-307	Dimensional Stones and Building Materials	2019			√
		GEO-308	Gemmology	2019			√
		GEO-309	Surveying and Field Geology	2019		√	√
		GEO-401	Economic Geology	2019	√		√
		GEO-402	Mineral Exploration, Mining & Engineering Geology	2019	√		
		GEO-403P	Economic Geology	2019	√		
		GEO-404P	Project Work	2019	√		
		GEO-405	Hydrogeology	2019			√
		GEO-406	Environmental Geology & Natural Hazards	2019			
		GEO-407	Water Shed Management	2019	√		
		GEO-408	Medical Geology	2019	√		
		GEO-409	Fuel Geology	2019			
36	Geology						
		FSND-101	Food Chemistry and Analysis	2019	Ö		
		FSND -102	Food Science and Experimental Foods	2019			Ö
		FSND -103	Clinical Nutrition and Dietetics-I	2019	Ö	Ö	
		FSND -104	Food Chemistry and Analysis Practical	2019	Ö		Ö
		FSND -105	Food Science and Experimental Foods Practical	2019			Ö
		FSND -106	Clinical Nutrition and Dietetics-I Practical	2019	Ö	Ö	
		FSND -107	Essential of Food and Community Nutrition	2019	Ö		
		FSND -108	Human Values and Professional Ethics-I	2019			Ö
		FSND -201	Nutritional Bio chemistry	2019			Ö
		FSND -202	Food Microbiology and Safety	2019	Ö		
		FSND -203	Clinical Nutrition and Dietetics-II	2019	Ö	Ö	
		FSND -204	Nutritional Bio chemistry Practical	2019			Ö
		FSND -205	Food Microbiology and Safety Practical	2019	Ö		Ö
		FSND -206	Clinical Nutrition and Dietetics-II Practical	2019	Ö	Ö	
		FSND -207	Research Methodology	2019			Ö
		FSND -208	Human Values and Professional Ethics-II	2019			Ö
		FSND -301	Food Processing and Preservation Technology	2019			Ö

		FSND -302	Advanced Human Nutrition	2019			Ö
		FSND -303	Rural Work Experience	2019			Ö
		FSND -304	Internship	2019	Ö		
		FSND -305	(a) Nutrition Research Techniques	2019			Ö
			(b)Geriatric Nutrition				
			(c)Nutrition in Emergencies and Disaster				
		FSND -306	(a) Fundamentals of Food, Nutrition and Health	2019			Ö
			(b)Nutritional Assessment				
		FSND -401	Food Safety Standards and Quality Control	2019	Ö		
		FSND -402	Food Product Development and Marketing	2019	Ö		
		FSND -403	Nutrition for Health and Fitness/Dissertation	2019	Ö	Ö	
		FSND -404	Food Safety Standards and Product Development Practical	2019	Ö		Ö
		FSND -405	(a) Institutional Food Service Management	2019			Ö
			(b)Improving Health and Nutrition IEC Approaches				
			(c)Food Packaging				
		FSND -406	(a) Child Welfare Programmes	2019			Ö
			(b)Disaster Management				
37	ome sciences Food Science Nutrition & Dieteti						
		HDCW-101	Advanced Study of Child Development	2019			ü
		HDCW-102	Community Nutrition	2019			ü
		HDCW-103	Trends in Early Childhood Education	2019	ü		ü
		HDCW-104	Developmental Assessment Practical	2019			ü
		HDCW-105	Community Nutrition Practical	2019			ü
		HDCW-106	Early Childhood Education Practical	2019	ü		ü
		HDCW-107	Family Dynamics	2019			
		HDCW-108	Human Values and Professional Ethics - I	2019			
		HDCW-201	Quality Standards in ECE Centers	2019	ü	ü	
		HDCW-202	Child Study Techniques	2019			ü
		HDCW-203	Children with Developmental Challenges	2019	ü		ü
		HDCW-204	Participation in ECE Center Practical	2019			ü
		HDCW-205	Child Study Techniques Practical	2019			ü
		HDCW-206	Children with Developmental Challenges Practical	2019	ü		ü
		HDCW-207	Research Methodology	2019			
		HDCW-208	Human values and Professional Ethics-II	2019			
		HDCW-301	Parent Education	2019			ü
		HDCW-302	Theories and Approaches to Child Guidance	2019	ü		ü
		HDCW-303	Rural Work Experience	2019			ü
		HDCW-304	Internship	2019	ü		
		HDCW-305 (A)	Infant Development and Stimulation	2019			ü
		HDCW-305 (B)	Family Life Education	2019		ü	
		HDCW-305 (C)	Planning For Project Management	2019			
		HDCW-306 (A)	(a) Fundamentals of Food, Nutrition and Health	2019			

		HDCW-306 (B)	b) Nutritional Assessment	2019			ü
		HDCW-401	Guidance and Counseling in Human Development	2019	ü		ü
		HDCW-402	Advanced Human Development	2019			ü
		HDCW-403	Thesis/Rehabilitation and Management of Children with Special Needs	2019	ü		ü
		HDCW-404	Guidance and Counseling Practical	2019	ü		ü
		HDCW-405 (A)	Child and Human Rights	2019	ü		
		HDCW-405 (B)	Care for Elderly	2019	ü		
		HDCW-406 (A)	Child Welfare Programmes	2019	ü	ü	
		HDCW-406 (B)	Disaster management	2019			
	Human Development and Child Welfare						
		EMCT-101	Extension Education in Community Development	2019	Ö		
		EMCT-102	Community Nutrition	2019			Ö
		EMCT-103	Communication and Media Preparation	2019	Ö		
		EMCT-104	Extension Education in Community Development Practical	2019	Ö		Ö
		EMCT-105	Community Nutrition Practical	2019			Ö
		EMCT-106	Communication and Media Preparation Practical	2019	Ö		Ö
		EMCT-107	Dynamics of Rural Society	2019	Ö		
		EMCT-108	Human Values and Professional Ethics-I	2019			Ö
		EMCT-201	Entrepreneurial Development and Empowerment of Women	2019	Ö	Ö	Ö
		EMCT-202	Educational Technology	2019	Ö		Ö
		EMCT-203	Community organization and Leadership	2019	Ö		Ö
		EMCT-204	Entrepreneurial Development and Empowerment of women Practical	2019	Ö	Ö	Ö
		EMCT-205	Educational Technology Practical	2019	Ö		Ö
		EMCT-206	Community Organization and Leadership Practical	2019	Ö		Ö
		EMCT-207	Research Methodology	2019	Ö		Ö
		EMCT-208	Human values and Professional Ethics-II	2019			Ö
		EMCT-301	Rural Development Administration	2019	Ö		Ö
		EMCT-302	Training and Development	2019	Ö		Ö
		EMCT-303	Rural Work Experience	2019			Ö
		EMCT-304	Internship	2019	Ö		Ö
		EMCT-305	(a) Managerial Skills for Extension Professionals	2019	Ö		Ö
	(b) Communication Technologies in Extension						
	(c) Sustainable Livelihood Systems						
		EMCT-306	(a) Fundamentals of Food, Nutrition and Health (or)	2019	Ö	Ö	Ö
			(b) Nutritional Assessment				
		EMCT-401	Principles of Guidance and Counseling	2019	Ö		Ö
		EMCT-402	Extension Programme Planning and Evaluation	2019	Ö	Ö	Ö
		EMCT-403	Thesis/ Community Health Management	2019	Ö		

		EMCT-404	Principles of Guidance and Programme Planning Practical	2019	Ö		
		EMCT-405	(a) Extension Management	2019	Ö		Ö
			(b) Science & Technology for Rural Women				
			(c) Environmental Management				
		EMCT-406	(a) Child Welfare Programmes	2019	Ö		
			or				
			(b) Disaster Management				
	on Management and Communication Tech						
		FT-101	Food Chemistry and Analysis	2019	Ö		
		FT-102	Food Science and Experimental Foods	2019	Ö		
		FT-103	Cereal Grains, Legumes and Oilseed Technology	2019	Ö		
		FT-104	Food Chemistry and Analysis	2019	Ö		Ö
		FT-105	Food Science and Experimental Foods	2019	Ö		Ö
		FT-106	Cereal Grains, Legumes and Oilseed Technology	2019	Ö	Ö	
		FT-107	Essentials of Food and Community Nutrition	2019			
		FT-108	Human Values and Professional Ethics - I	2019			Ö
		FT-201	Technology of Horticulture produce	2019	Ö		
		FT-202	Food Microbiology and Safety	2019	Ö		Ö
		FT-203	Dairy Technology	2019	Ö		
		FT-204	Technology of Horticulture produce	2019	Ö	Ö	Ö
		FT-205	Food Microbiology and Safety	2019	Ö		Ö
		FT-206	Dairy Technology	2019	Ö	Ö	Ö
		FT-207	Research Methodology	2019			Ö
		FT-208	Human Values and Professional Ethics – II	2019			Ö
		FT-301	Food processing and Preservation Technology	2019	Ö		Ö
		FT-302	Live Stock and Sea Food technology	2019	Ö		Ö
		FT-303	Food Processing and Preservation Technology	2019	Ö	Ö	Ö
		FT-304	In plant training.	2019	Ö	Ö	Ö
		FT-305(a)	(a) Unit operations in Food Industry.	2019	Ö		Ö
			.				
			.				
		FT-305(a)	(b) Spices, Condiments and Plantation Crops	2019	Ö		
		FT-305(a)	(c) Nutrition in Emergencies and Disaster	2019			
		FT-306(a)	(a) Fundamentals of Food, Nutrition and Health	2019	Ö		
		FT-306(b)	b) Nutritional Assessment	2019			Ö
		FT-401	Food Safety Standards and Quality Control	2019	Ö		Ö
		FT-402	Food Product Development and Marketing	2019	Ö		Ö
		FT-403	Nutrition for Health and Fitness/Project Work	2019	Ö	Ö	
		FT-404	Food Safety standards and Product Development	2019	Ö	Ö	Ö
		FT-405 (a)	(a) Institutional food service management	2019	Ö	Ö	
		FT-405 (b)	(b) Basic Food Engineering	2019	Ö		Ö
		FT-405 (c)	(c) Food Packaging	2019	Ö	Ö	
		FT-406(a)	(a) Child Welfare Programmes	2019			

	Food Technology	FT-406(a)	(a) Child welfare Programmes	2019			
		FT-406(b)	(b) Disaster Management	2019			
		MA 101	Algebra	2019			ü
		MA 102	Real analysis	2019			ü
		MA 103	Ordinary Differential equations	2019			ü
		MA 104	Complex analysis	2019			ü
		MA 105	Computer Oriented Numerical Methods	2019	ü		ü
		MA 106	Human Values & Professional Ethics-I	2019	ü	ü	ü
		MA 201	Galois Theory	2019			ü
		MA 202	Partial Differential Equations	2019			ü
		MA 203	Topology	2019			ü
		MA 204	a) Advanced Complex analysis	2019			ü
	b) Semi group theory						
	c) Non linear Analysis						
		MA 205	Human Values & Professional Ethics-II	2019	ü	ü	ü
		MA 206	Measure and Integration	2019			ü
		MA 301	Commutative Algebra	2019			ü
		MA 302	Functional Analysis	2019			ü
		MA 303	Classical Mechanics	2019	ü		ü
		MA 304	a) Differential Geometry	2019	ü	ü	ü
	b) Cryptography						
	c) Linear Algebra						
		MA 305	a) Discrete Mathematics	2019	ü	ü	ü
			b) Business Mathematics				
			c) Basic Mathematics for Social Sciences				
		MA 401	Number Theory	2019			ü
		MA 402	Banach Algebra	2019			ü
		MA 403	Graph Theory	2019	ü	ü	ü
		MA 404	a) Mathematical Statistics	2019	ü	ü	ü
			b) Approximation Theory				
			c) Algebraic coding Theory				
		MA 405	a) Operation Research	2019	ü	ü	ü
			b) Theoretical Computer Science				
			c) Biomechanics				
38	Mathematics						
		AM 101	Methods of Applied Mathematics	2019			ü
		AM 102	Real analysis	2019			ü
		AM 103	Ordinary Differential equations	2019			ü
		AM 104	Complex analysis	2019			ü
		AM 105	Human Values & Professional Ethics-I	2019	ü	ü	ü
		AM 106	Computer Oriented Numerical Methods	2019	ü		ü
		AM 201	Mathematical Modeling	2019			ü

AM 202	Partial Differential Equations	2019			ü		
AM 203	Topology	2019			ü		
AM 204	d) Advanced Complex analysis	2019			ü		
	e) Semi group theory						
	f) Non linear Analysis						
AM 205	Human Values & Professional Ethics-II	2019	ü	ü	ü		
AM 206	Measure and Integration	2019			ü		
AM 301	Continuum Mechanics	2019	ü		ü		
AM 302	Functional Analysis	2019			ü		
AM 303	Classical Mechanics	2019	ü		ü		
AM 304	d) Differential Geometry	2019	ü	ü	ü		
	e) Cryptography						
	f) Linear Algebra						
AM 305	a) Discrete Mathematics	2019	ü	ü	ü		
	b) Business Mathematics						
	c) Basic Mathematics for Social Sciences						
AM 401	Number Theory	2019			ü		
AM 402	Fluid Dynamics	2019	ü		ü		
AM 403	Graph Theory	2019	ü		ü		
AM 404	d) Mathematical Statistics	2019	ü	ü	ü		
	e) Approximation Theory						
	f) Algebraic coding Theory						
AM 405	a) Operation Research	2019	ü	ü	ü		
	b) Theoretical Computer Science						
	c) Biomechanics						
Applied Mathematics							
39	Microbiology	MB-101	Biological Chemistry & Analytical Techniques	2019	ö	ö	ö
		MB-102	Enzymology & Microbial Physiology & Metabolism	2019	ö	ö	ö
		MB-103P	Practical – I .Biological Chemistry & Analytical Techniques	2019	ö	ö	ö
		MB-104P	Practical – II Enzymology & Microbial Physiology & Metabolism	2019			ö
		MB-105	Introductory Microbiology	2019			ö
		MB-106	Human Values and Professional Ethics – I	2019	ö		ö
		MB-201	Immunology	2019	ö	ö	ö
		MB-202	Medical Microbiology	2019	ö	ö	ö
		MB-203P	Practical – I Immunology	2019	ö	ö	ö
		MB-204P	Practical – II Medical Microbiology	2019	ö	ö	ö
		MB-205	Basics of Virology	2019			ö
		MB-206	Human Values and Professional Ethics –II	2019	ö		ö
		MB-301	Microbial Genetics and Molecular Biology	2019	ö	ö	ö
		MB-302	Recombinant DNA Technology & Bioinformatics	2019	ö	ö	ö
		MB-303	Microbial Genetics and Molecular Biology & Recombinant DNA Technology & Bioinformatics	2019	ö	ö	ö
		MB-304	a) Agricultural Microbiology	2019	ö	ö	ö
			b) Food Microbiology				
		MB-305	a) Agricultural Microbiology	2019	ö	ö	ö
			b) Food Microbiology				

		MB-306	a) Applied Microbiology	2019	Ö	Ö	Ö
			b) Industrial Food Microbiology				
		MB-401	Molecular Cell Biology & Technology	2019	Ö		Ö
		MB-402	Environmental Microbiology	2019	Ö	Ö	Ö
		MB-403	Molecular Cell Biology & Technology & Environmental Microbiology	2019	Ö		Ö
		MB-404	Project				
		MB-405	a) Agricultural Biotechnology	2019	Ö	Ö	Ö
			b) Bioprocess Engineering				
		MB-406	a) Fermentation Technology	2019	Ö	Ö	Ö
			b) Pharmaceutical Microbiology				
		IMB-101	Biological Chemistry & Analytical Techniques	2019	Ö	Ö	Ö
		IMB-102	Enzymology & Microbial Physiology & Metabolism	2019	Ö	Ö	Ö
		IMB-103P	Practical – I .Biological Chemistry & Analytical Techniques	2019	Ö	Ö	Ö
		IMB-104P	Practical – II Enzymology & Microbial Physiology & Metabolism	2019			Ö
		IMB-105	Introductory Microbiology	2019			Ö
		IMB-106	Human Values and Professional Ethics – I	2019	Ö		Ö
		IMB-201	Immunology	2019	Ö	Ö	Ö
		IMB-202	Medical Microbiology	2019	Ö	Ö	Ö
		IMB-203P	Practical – I Immunology	2019	Ö	Ö	Ö
		IMB-204P	Practical – II Medical Microbiology	2019	Ö	Ö	Ö
		IMB-205	Basics of Virology	2019			Ö
		IMB-206	Human Values and Professional Ethics –II	2019	Ö		Ö
		IMB-301	Fundamentals of Industrial Microbiology	2019	Ö	Ö	Ö
		IMB-302	Food Microbiology and Fermentation Technology	2019	Ö	Ö	Ö
		IMB-303	Fundamentals of Industrial Microbiology	2019			Ö
		IMB-304	Food Microbiology and Fermentation Technology	2019	Ö	Ö	Ö
		IMB-305	a) Bioprocessing of Industrial Microorganisms and their Products	2019	Ö		Ö
			b) Bioprocess Engineering and Technology				
		IMB-306	a) Industrial Biotechnology	2019	Ö	Ö	Ö
			b)Immuno Technology and Human Health				
		IMB-401	Downstream Processing Technology	2019	Ö		Ö
		IMB-402	Cell and Pharmaceutical technology	2019	Ö	Ö	Ö
		IMB-403	Downstream Processing Technology & Cell and Pharmaceutical technology	2019	Ö		Ö
		IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2019			Ö
		IMB-405	a) Biostatistics & Bioinformatics	2019			Ö
			b) Biosafety, Bioethics and Intellectual property rights				
		IMB-406	a) Microbes in Human Welfare	2019	Ö	Ö	Ö
			b) Medical and Diagnostic Microbiology				
		PHY 101	Classical Mechanics and Theory of Relativity	2019			ü
		PHY 102	Atomic and Molecular Physics	2019			
		PHY 103	Solid State Physics	2019			
		PHY 104	Analog and Digital Electronics	2019			

		PHY 105	General Physics lab. - I	2019			
		PHY 106	Electronics lab. - I	2019			ü
		PHY 201	Statistical Mechanics	2019			
		PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2019			ü
		PHY 203	Mathematical Physics	2019			
		PHY 204	Nuclear Physics and Analytical Techniques	2019		ü	ü
		PHY 205	General Physics lab. - II	2019			
		PHY 206	Electronics lab. - II	2019			ü
		PHY 301	Quantum Mechanics – I	2019	ü		
		PHY 302	Physics of semiconductor devices	2019	ü		
		PHY 303	A) Applied Spectroscopy-I	2019	ü		
			B) Condensed Matter Physics-I	2019			
			C) Electronics-embedded systems	2019	ü		
		PHY 304	A) Photonics - I	2019	ü		
			B) Solar Energy-Thermal Aspects	2019	ü		
			C) Vacuum and Thin Film Technology	2019	ü		
		PHY 305	Specialization-Lab.	2019			
		PHY 306	Elective - Lab	2019			
		PHY 401	Quantum Mechanics - II	2019			ü
		PHY 402	Advances in Physics	2019			ü
		PHY 403	A) Applied Spectroscopy-II	2019			ü
			B) Condensed Matter Physics-II	2019			ü
			C) Electronics-Wireless Communications	2019			
		PHY 404	A) Photonics - II	2019	ü		
			B) Solar Energy-Photovoltaic Aspects	2019	ü		ü
			C) Properties and Applications of Thin Films	2019			
		PHY 405	Specialization-Lab. – II /	2019			ü
			Project Work	2019			ü
		PHY 406	Elective – Lab. - II /	2019			
			Project Work	2019			
40	Physics						
					√		
		PSY 103b	Psychological Measurement-I(CF)	2019	√		
		PSY 103c	Positive Psychology (CF)	2019	√		
		PSY 104a	Child Development Psychology	2019	√		√
		PSY 104b	Psychological Measurement & Statistics	2019	√		
		PSY 104c	Forensic Psychology	2019	√		√
		PSY 105	Practicals related to General Psychology –II& Psychopathology-II	2019			√
		PSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2019			
		PSY 203a	Psychopathology-II (CF)	2019	√		
		PSY 203b	Psycho-Diagnosis (CF)	2019	√		√
		PSY 203c	Computer Application in Psychological Research-(CF)	2019	√		√
		PSY 204b	Consumer Behavior	2019	√		
		PSY 204c	Industrial & Organizational Psychology	2019	√		
41	Psychology	PSY 205	Practicals related to General Psychology –II& Psychopathology-II	2019			√

PSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2019			√
PSY 301	Counseling Psychology (CC)	2019	√		√
PSY 302	Psychology of Personality (CC)	2019	√		
PSY 303a	Organizational Behavior & HRM (GE)	2019	√		
PSY 303b	Therapeutic Approaches in Counseling-I	2019	√		√
PSY 303c	Health Psychology(GE)	2019	√		
PSY 304	Core & Generic Elective	2019	√		√
PSY 305	Stress Management Theory & Practical	2019	√		√
PSY 306	Personality Development (OE)	2019	√		
PSY 401	Therapeutic Approaches in Counseling-II(CC)	2019	√		√
PSY 401c	c. Rehabilitation Psychology (GE)	2019	√		√
PSY 404	Core & Generic Elective	2019	√		√
PSY 406	Life Skills (OE)	2019	√		√
CPSY 103a	Psychopathology-I (CF)	2019	√		
CPSY 103b	Psychological Measurement-I(CF)	2019	√		
CPSY 103c	Positive Psychology (CF)	2019	√		
CPSY 104a	Child Development Psychology	2019	√		√
CPSY 104b	Psychological Measurement & Statistics	2019	√		
CPSY 104c	Forensic Psychology	2019	√		√
CPSY 105	Practicals related to General Psychology –II& Psychopathology-II	2019			√
CPSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2019			
CPSY 203a	Psychopathology-II (CF)	2019	√		
CPSY 203b	Psycho-Diagnosis (CF)	2019	√		√
CPSY 203c	Computer Application in Psychological Research-(CF)	2019	√		√
CPSY 204b	Consumer Behavior	2019	√		
CPSY 204c	Industrial & Organizational Psychology	2019	√		
CPSY 205	Practicals related to General Psychology –II& Psychopathology-II	2019			√
CPSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2019			√
CPSY 301	Counselling Process	2019	√		√
CPSY 302	Counselling Skills	2019	√		
CPSY 303a	Therapeutic Approaches in Counseling-I	2019	√		
CPSY 303b	Counseling in Organizational Settings	2019	√		√
CPSY 303c	Health Psychology	2019	√		
CPSY 304	Practicals related to counseling skills & Counseling in Organizational Settings	2019	√		√
CPSY 305	Stress Management & Counseling Psychology	2019	√		√
CPSY 306	Personality Development	2019	√		
CPSY 401	Applications of Counselling in Special Areas	2019	√		√
CPSY 402	Therapeutic Approaches in Counselling-II	2019	√		√

		CPSY 403a	Counseling in Hospital Settings	2019	√		√
		CPSY 403b	Counseling in Community Settings	2019	√		√
			Family Counseling				
		CPSY 403c	Family Counseling	2019	√		√
		CPSY 404	Practicals related to counseling techniques & applications in different areas	2019	√		√
		CPSY 405	Allotment of Project work (Theory and Practice)	2019			
		CPSY 406	Life Skills (OE)	2019			
42	Statistics	ST - 305 (a)	Bio-Statistics	2019-20	yes		
		ST - 305 (c)	Total Quality Management and Six- Sigma	2019-20			yes
		ST - 405 (b)	Statistics for Research, industry and Community Development	2019-20		yes	
		ST - 405 (c)	Advanced Econometric Models	2019-20	yes		
		ST - 406 (b)	Survival Analysis	2019-20	yes		
		APST – 305 (a)	Advanced Bio-Statistics	2019-20	yes		
		APST – 305 (c)	Data Mining and Information Security	2019-20			yes
		APST – 305 (a)	Statistics for Research, industry and Community Development	2019-20		yes	
		APST – 305 (c)	Actuarial Statistics	2019-20			Yes
		VR-101	General Microbiology	2019	P		
		VR-102	General Virology	2019			
		VR-103(P)	General Microbiology and Virology	2019	P	P	P
		VR-104(P)	Biological Chemistry and Analytical Techniques	2019	P	P	P
		VR-105	Biological Chemistry and Analytical Techniques	2019	P		
		VR-106	Human values and Professional ethics - I	2019			
		VR-201	General Microbiology	2019	P		
		VR-202	General Virology	2019	P	P	P
		VR-203(P)	General Microbiology and Virology	2019	P	P	P
		VR-204(P)	Biological Chemistry and Analytical Techniques	2019	P	P	P
		VR-205	Biological Chemistry and Analytical Techniques	2019	P	P	P
		VR-206	Human values and Professional ethics - I	2019			
		VR-301	Plant Virology	2019	P		
		VR-302	Plant Viruses and Diseases	2019	P		P
		VR-303(P)	Plant Virology and Plant Viruses and Diseases	2019	P		P
		VR-304(P)	a) Molecular Virology (OR) b) Biostatistics and Bio-informatics	2019	P	P	P
		VR-305	(a) Molecular Virology (OR) (b) Biostatistics and Bio-informatics	2019	P		
		VR-306	(a) Biology of Viruses and their management (OR) (b) Biology of Virus Vectors and their management	2019		P	
		VR-401	Animal and Human Virology	2019	P		

43	Virology	VR-402	Animal and Human Virus Diseases	2019	P		P
		VR-403	Animal and Human Virology & Virus Diseases	2019	P	P	P
		VR-404-A(P) (OR)	Applied Virology/Tumor Biology and Viruses (OR)	2019	P	P	P
		VR-4-04-B(P)	Project work related to Virology				
		VR-405	(a) Applied Virology	2019	P	P	P
			(OR)				
		VR-406	(b) Tumor Biology and Viruses	2019	P	P	P
(a) Clinical Virology							
		ZOO-101	Invertebrata & Chordata	2019			
		ZOO-102	Genetics & Evolution	2019	ü		ü
		ZOO-103P	Practical-I	2019			ü
			Invertebrata & Chordata and Genetics				
		ZOO-104P	Practical-II	2019	ü	ü	ü
			Metabolic Regulation & Cell Function and Evolution				
		ZOO-105	Metabolic Regulation & Cell Function	2019	ü		ü
		ZOO-106	Human Values and Professional Ethics-I	2019			ü
		ZOO-201	Cell Biology & Immunology	2019	ü		ü
		ZOO-202	Molecular Biology	2019	ü	ü	ü
		ZOO-203P	Practical-I	2019	ü	ü	ü
			Molecular Biology and Cell Biology				
		ZOO-204P	Practical-II	2019	ü	ü	ü
			Comparative Animal Physiology and Immunology				
		ZOO-205	Comparative Animal Physiology	2019	ü		ü
		ZOO-206	Human Values and Professional Ethics-II	2019			ü
		ZOO-301	Developmental Biology	2019	ü		ü
		ZOO-302	Environmental Biology	2019	ü		ü
		ZOO-303P	Developmental Biology and Tools & Techniques	2019	ü	ü	ü
		ZOO-304P	Environmental Biology and Enzymology	2019	ü	ü	ü
		ZOO-305A	Tools & Techniques	2019	ü	ü	ü
		ZOO-305B	Enzymology	2019	ü		ü
		ZOO-305C	Environmental Microbiology	2019	ü		ü
		ZOO-306A	Economic Zoology	2019	ü	ü	ü
		ZOO-306B	Structural Biology	2019	ü	ü	ü
		ZOO-306C	Human Health and Infectious diseases	2019	ü	ü	ü
		ZOO-401	Neurobiology	2019	ü		ü
		ZOO-402	Toxicology	2019	ü		ü
		ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2019	ü	ü	ü
		ZOO-404P	Toxicology and Animal Behavior & Wild life	2019	ü		ü
		ZOO-405A	Animal Biotechnology & Microbiology	2019	ü		ü
		ZOO-405B	Animal Behavior & Wild life	2019	ü		ü
		ZOO-405C	Endocrinology	2019	ü		ü
		ZOO-406A	Genetic Engineering	2019	ü	ü	ü
		ZOO-406B	Environmental Impact Assessment & Green Auditing	2019	ü		ü

44	Zoology	ZOO-406C	Medical biotechnology, IPR, Biosafety methods	2019	ü		ü
		ABT- Core- 101	Metabolic Regulation & Cell Function (MRCF)	2019	ü		
		ABT- Core- 102	Tools & Techniques (TT)	2019			ü
		ABT-Core-P-103	MRCF	2019	ü		ü
		ABT-Core-P-104	TT	2019	ü		ü
		ABT-CF-105	Microbiology and Diseases	2019	ü		ü
		ABT -EF- 106	Human Values & Professional Ethics (HVPE)-I	2019			ü
		ABT- Core- 201	Molecular Biology (MB)	2019	ü		ü
		ABT- Core- 202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2019	ü		ü
		ABT-Core-P-203	MB & IM	2019	ü		ü
		ABT-Core-P-204	ACC-SCB & CB	2019	ü		ü
		ABT- CF-205	Cell Biology & Immunology (CB&IM)	2019	ü		
		ABT- EF- 206	Human Values & Professional Ethics (HVPE)-II	2019			ü
		ABT- Core- 301	Enzymology (ENZ)	2019	ü		ü
		ABT- Core- 302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2019	ü	ü	ü
		ABT-Core-P-303	ENZ & GE	2019	ü		ü
		ABT-Core-P-304	ARBTT & EBT	2019	ü		ü
		GE-305A	Cancer Biology	2019	ü		ü
		GE-305B	Animal Biotechnology & Industrial Applications	2019	ü		ü
		GE-305C	Biostatistics & Bioinformatics	2019	ü		ü
		OE-306A	Environmental Biotechnology (EBT)	2019	ü		ü
		OE-306B	Genetic Engineering (GE)	2019	ü		ü
		ABT- Core- 401	Medical Biotechnology (MBT)	2019	ü		ü
		ABT- Core- 402	Fermentation Technology and Down streaming Process (FTDSP)	2019	ü		ü
		ABT-Core-P-403& 404	Project and Viva- Voce	2019	ü	ü	ü
		GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2019	ü		ü
		GE-405B	Drug design and Development	2019	ü		ü
		GE-405C	Animal Cell Culture Techniques	2019	ü		ü
		OE-406A	Advanced Genomics and Proteomics	2019	ü		ü
	Animal Biotechnology	OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2019	ü		ü
		MBA-101	Management and Organizational Behaviour	2019			ü
		MBA-102	Managerial Communication	2019	ü	ü	ü
		MBA-104	Accounting for managers	2019	ü		
		MBA-108	Human Values and Professional Ethics-I	2019	ü	ü	ü

45	Business Management	MBA-201	Marketing Management	2019			ü
		MBA-204	Production Management	2019			ü
		MBA-208	Leadership values and Styles	2019		ü	ü
		MBA-302	Entrepreneurship	2019		ü	
		MBA-303	Industrial Project Course	2019	ü	ü	
		MBA-401	Digital Business Models	2019	ü		
		MBA-402	Strategic Management	2019			ü
		MBA-404	Organisation Development	2019			ü
		MCA 101	Discrete Mathematical Structures	2019	✓		
		MCA 102	Introduction to Internet Technologies	2019	✓		
		MCA 103	Object Oriented Programming with JAVA	2019	✓		
		MCA 104	Computer Organization	2019	✓		
		MCA 105	105A Business and Management	2019	✓	✓	
			105B Essentials of Management	2019	✓	✓	
		MCA 106	Human values and Professional Ethics	2019		✓	
		MCA 107P	Software Lab based in 101 & 103	2019	✓		✓
		MCA 108P	Internet technologies Lab	2019	✓		✓
		MCA 109P	PC Hardware & Office Automation Lab	2019	✓		✓
		MCA 201 A	Probability and Statistics for Computer Applications	2019	✓		
		MCA 201 B	Statistical Methods for Computer Applications	2019	✓		
		MCA 202	Data Structures using JAVA	2019	✓		
		MCA 203	Operating Systems	2019	✓		
		MCA 204	Advanced Database Management Systems	2019	✓		
		MCA 205	Data Science Essentials	2019	✓		
		MCA 206	Leadership values	2019	✓	✓	
		MCA 207P	Software Lab (based on 201 & 203)	2019	✓		✓
		MCA 208P	Data Structures Lab	2019	✓		✓
		MCA 209P	Advanced Database Management Systems Lab	2019	✓		✓
		MCA 210S	Group Desiccations	2019			
		MCA 301	Computer Oriented Operations Research	2019		✓	
		MCA 302	Data Communications and Computer Networks	2019	✓		
		MCA 303	Software Engineering	2019	✓	✓	
		MCA 304	Computer Graphics	2019	✓		
		MCA 305	305A Technical Communication and Computer Ethics	2019	✓		
			305B Soft Skills	2019			✓
		MCA 306P	Software lab (based on 301, 302 & 305)	2019	✓		✓
		MCA 307P	Software Engineering Lab	2019	✓		✓
		MCA 308P	Computer Graphics Lab	2019	✓		✓
		MCA 309S	Seminar & Group Desiccations	2019			✓

		MCA 401	Data Warehousing and Data Mining	2019	✓		
		MCA 402	System Programming	2019	✓		
			403A Web Programming	2019	✓		
		MCA 403	403B Artificial Intelligence	2019	✓		
			403C Software Testing	2019	✓		
			404A E-Commerce	2019	✓	✓	
		MCA 404	404B Cyber Security	2019	✓		
			404C Neural Networks	2019	✓		
			Accounting and Financial Management	2019	✓		
		MCA 405 A	Accounting Essentials for Computer Applications	2019	✓		
		MCA 406	Human Rights & Value Education	2019		✓	
		MCA 407P	Data Mining Lab	2019	✓		✓
		MCA 408P	System Programming Lab	2019	✓		✓
		MCA 409P	Minor Project (by taking case studies from the Generic Elective courses)	2019	✓		✓
		MCA 410S	Technical Seminar	2019			✓
		MCA 501	Big data and Business Analytics	2019	✓		
		MCA 502	Cloud Computing	2019	✓		
			Elective III				
			503A User Interface Design				
		MCA 503	503B Cryptography and Network Security	2019	✓		
			503C Mobile App Development				
			503D IT in Forensic Science				
			Elective IV 504A Image Processing 504B Multimedia System				
			504C Natural Language Processing	2019	✓		
		MCA 504					
		MCA 507P	Software Lab (Case studies from 501)	2019	✓		✓
		MCA 508P	Software Lab (Case studies from 502)	2019	✓		✓
		MCA 509P	Minor Project Work	2019	✓		✓
		MCA 509S	Seminar	2019			✓
46	Computer Science	MCA 601	Major Project Work	2019	✓		✓
		MSCS -101C	Computer Organization	2019	✓		
		MSCS -102C	Programming in Java & Data Structures	2019	✓		
		MSCS -103C	Operating Systems	2019	✓		
		MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2019	✓		
		MSCS – 104 GE - B	Computer Oriented Operational Research		✓		

MSCS - 05CF	Environmental Studies	2019		✓	
MSCS - 106EF	A. PC Hardware Basics			✓	
MSCS - 106EF	B. Statistical Methods	2019		✓	
MSCS - 107P1			✓		✓
MSCS - 108P2		2019	✓		✓
MSCS -201C	Advanced Data Base Management System	2019	✓		
MSCS -202C	Computer Networks		✓		
MSCS -203C	Computer Graphics	2019	✓		
MSCS- 204 GE – A	E- Commerce		✓	✓	
MSCS- 204 GE B	Accounting And Financial Management	2019	✓		
MSCS- 205CF	Human Rights And Value Education		✓		
MSCS- 206 EF A	Principles Of Management	2019	✓	✓	
MSCS- 206 EF B	Internet Of Things	2019	✓		
MSCS- 207P1			✓		✓
MSCS- 208P2		2019	✓		✓
MSCS-301C	Data Warehousing And Data Mining	2019	✓		
MSCS-302C	Web Technologies		✓		
MSCS-303C	Software Engineering	2019	✓	✓	
MSCS -304- GE-A	Systems Programming		✓		
MSCS -304- GE-B	Computer Algorithms	2019	✓		
MSCS -304- GE-C	UID Using .Net Technologies		✓		
MSCS -304- GE-D	IT in Forensic Science	2019	✓		
MSCS -304- GE-E	Software Testing		✓		
MSCS -305 GE-A	Cloud Computing	2019	✓		
MSCS -305 GE-B	Big Data Analytics	2019	✓		
MSCS -305 GE-C	Artificial Neural Networks	2019	✓		
MSCS -305 GE-D	Cyber Security	2019	✓		
MSCS -305 GE-E	Mobile App Development	2019	✓		
	The courses offered by other departments	2019			
	1. Programming in C				
MSCS - 306OE	2. Office Automation	2019	✓		

			3. Internet				
			Fundamentals and Web Designing	2019			
46	MSC M.Sc Computer Science	MSCS - 307P1			✓		✓
		MSCS - 308P2		2019	✓		✓
		MSCS – 401	Major Project Work		✓		✓
		101	Accounting Standards & Reporting	2019	Ö		
		102	Financial Management	2019	Ö		Ö
		103	Business Environment and Policy	2019		Ö	Ö
		104	Organisational Behaviour	2019	Ö		Ö
		105a	Quantitative Techniques for Business Decisions	2019			Ö
		106	Human Values & Professional Ethics - II	2019		Ö	Ö
		201	Advanced cost Accounting	2019	Ö		
		202	Financial Markets and Services	2019	Ö		Ö
		203	Strategic Financial Management	2019	Ö		Ö
		204	Corporate Governance	2019	Ö	Ö	
		205a	Working Capital Management	2019	Ö	Ö	
		206a	e-Banking Operations	2019			Ö
		301	Security Analysis and Portfolio Management	2019	Ö		Ö
		302	Accounting for Managerial Decisions	2019	Ö		Ö
		303a.	Tally with GST Application	2019	Ö		Ö
		304c.	Entrepreneurship & MSMEs	2019	Ö		Ö
		304a	Security Ananalysis & Portfolio Management	2019	Ö		Ö
		305a	Fundamentals of Accounting	2019			Ö
		401	Financial Derivatives	2019			Ö
		402	Tax Planning & Managemnt	2019	Ö		Ö
		403a.	E-Commerce	2019	Ö		Ö
		404b.	Personality Development & Soft Skills	2019	Ö		Ö
		405a	Security Market Operations	2019	Ö		Ö
		101	Accounting Standards & Reporting	2019	Ö		
		102	Financial Management	2019	Ö		Ö
		103	Business Environment and Policy	2019		Ö	Ö
		104	Organisational Behaviour	2019	Ö		Ö
		105a	Quantitative Techniques for Business Decisions	2019			Ö
		106	Human Values & Professional Ethics - I	2019		Ö	Ö
		201	Advanced cost Accounting	2019	Ö		
		202	Financial Markets and Services	2019	Ö		Ö
		203	Strategic Financial Management	2019	Ö		Ö

		204	Corporate Governance	2019	Ö	Ö	
		205a	Working Capital Management	2019	Ö	Ö	
		206a	e-Banking Operations	2019			Ö
	M.com(A&F)	301	Security Analysis and Portfolio Management	2019	Ö		Ö
		302	Accounting for Managerial Decisions	2019	Ö		Ö
		303a.	Tally with GST Application	2019	Ö		Ö
		303c.	Tax planning & Management	2019	Ö		Ö
		304a	Accounting for Managerial Decisions	2019	Ö		Ö
		305a	Fundamentals of Accounting	2019			Ö
		401	Financial Derivatives	2019			Ö
		402	Project Planning & Control	2019	Ö		Ö
		403a.	Insurance Management	2019	Ö		Ö
		403b.	Personality Development & Soft Skills	2019	Ö		Ö
		405a	Security Market Operations	2019	Ö		Ö
		101	Accounting Standards & Reporting	2019	Ö		
		102	Financial Management	2019	Ö		Ö
		103	Business Environment and Policy	2019		Ö	Ö
		104	Organisational Behaviour	2019	Ö		Ö
		105a	Quantitative Techniques for Business Decisions	2019			Ö
		106	Human Values & Professional Ethics - I	2019		Ö	Ö
		201	Advanced cost Accounting	2019	Ö		
		202	Financial Markets and Services	2019	Ö		Ö
		203	Strategic Financial Management	2019	Ö		Ö
		204	Corporate Governance	2019	Ö	Ö	
		205a	Working Capital Management	2019	Ö	Ö	
		206a	e-Banking Operations	2019			Ö
		301	Security Analysis and Portfolio Management	2019	Ö		Ö
		302	Accounting for Managerial Decisions	2019	Ö		Ö
		303a.	Tally with GST Application	2019	Ö		Ö
		303c.	Tax planning & Management	2019	Ö		Ö
		304a	International Financial Management	2019	Ö		Ö
		305a	Fundamentals of Accounting	2019			Ö
		401	Financial Derivatives	2019			Ö
		402	Project Planning & Control	2019	Ö		Ö
		403a.	Insurance Management	2019	Ö		Ö
		404d.	Mergers & Acquisitions	2019	Ö		Ö
		405a	Security Market Operations	2019	Ö		Ö

	BPH 101A	Mathematics (For Bi.P.C. Stream)	2019	✓			
	BPH 101B	Biology (For M.P.C. Stream)	2019	✓			
	BPH 101C	Biology Practicals (For M.P.C. Stream)	2019	✓	✓		✓
	BPH 102	English & Soft Skills	2019	✓			✓
	BPH 103	Pharmaceutical. Inorganic Chemistry	2019	✓	✓		
	BPH 104	Pharmaceutical Organic Chemistry-I	2019	✓	✓		
	BPH 105	Human Anatomy and Physiology	2019	✓			
	BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2019	✓	✓		✓
	BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2019	✓	✓		✓
	BPH 108	Human Anatomy and Physiology Practicals	2019	✓	✓		✓
	BPH 109	General & Dispensing Pharmacy	2019	✓			
	BPH 110	Pharmaceutical Organic Chemistry-II	2019	✓			
	BPH 111	Computer applications	2019	✓			✓
	BPH 112	Pharmacognosy I	2019	✓			
	BPH 113	Human Anatomy and Physiology and Pathophysiology	2019	✓			
	BPH 114	General & Dispensing Pharmacy Practicals	2019	✓	✓		✓
	BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2019	✓	✓		✓
	BPH 116	Computer applications Practicals	2019	✓	✓		✓
	BPH 117	Pharmacognosy I	2019	✓	✓		✓
		Practicals	2019				
	BPH 201	Physical pharmacy –I (Theory)	2019	✓			
	BPH 202	Pharmaceutical Engineering (Theory)	2019	✓			
	BPH 203	Pharmaceutical organic chemistry III (Theory)	2019	✓			
	BPH 204	Pharmaceutical Biochemistry (Theory)	2019	✓			
	BPH 205	Environmental studies (Theory)	2019	✓			
	BPH 206	Physical pharmacy –I (Practical)	2019	✓	✓		✓
	BPH 207	Pharmaceutical Engineering (Practical)	2019	✓	✓		✓
	BPH 208	Pharmaceutical organic chemistry III (Practical)	2019	✓	✓		✓
	BPH 209	Pharmaceutical Biochemistry (Practical)	2019	✓	✓		✓
	BPH 210	Physical Pharmacy II (Theory)	2019	✓			
	BPH 211	Pharmaceutical Analysis I (Theory)	2019	✓			
	BPH 212	Pharmaceutical Technology I (Theory)	2019	✓			
	BPH 213	Pharmacognosy II (Theory)	2019	✓			
	BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2019	✓			
	BPH 215	Pharmaceutical pharmacy II (Practical)	2019	✓	✓		✓
	BPH 216	Pharmaceutical Analysis I (Practical)	2019	✓	✓		✓
	BPH 217	Pharmaceutical technology I (Practical)	2019	✓	✓		✓
	BPH 218	Pharmacognosy II (Practical)	2019	✓	✓		✓
	BPH 301	Pharmaceutical Technology-II	2019	✓			
	BPH 302	Medicinal chemistry – I	2019	✓			
	BPH 303	Pharmacology – I	2019	✓			
	BPH 304	Pharmaceutical microbiology	2019	✓			
	BPH 305	Drug store and Industrial Management and Marketing	2019	✓			
	BPH 306	Pharmaceutical Technology-II	2019	✓			

B.Pharmacy

		BPH 307	Medicinal chemistry-I practicals	2019	✓	✓	✓
		BPH 308	Pharmaceutical Microbiology practicals	2019	✓	✓	✓
		BPH 309	Medicinal chemistry-II (theory)	2019	✓		
		BPH310	Pharmacology II– Theory	2019	✓		
		BPH311	Pharmaceutical. Analysis II(Theory)	2019	✓		
		BPH312A	Forensic Pharmacy– Theory	2019	✓		
		BPH312B	Clinical Trials– Theory	2019	✓		
		BPH312 C	Industrial.Pharmacy & Cosmetic Technology– Theory	2019	✓		
		BPH313	Medicinal Chemistry-II Practical	2019	✓	✓	✓
		BPH314	Pharmacology-II Practical	2019	✓	✓	✓
		BPH315	Pharmaceutical. Analysis II Practical	2019	✓	✓	✓
		BPH 401	Medicinal Chemistry-III	2019	✓		
		BPH 402	Pharmacology-III	2019	✓		
		BPH 403:	Pharmacognosy-III	2019	✓		
		BPH 404:	Biopharmaceutics & Pharmacokinetics	2019	✓		
		BPH 405A:	Chemistry Of Natural Products	2019	✓		
		BPH 405B:	Hospital & Community Pharmacy	2019	✓		
		BPH 405C	Pharmacovigilance	2019	✓	✓	
		BPH 406	Medicinal Chemistry-III Practical	2019	✓	✓	✓
		BPH 407	Pharmacology-III Practical	2019	✓	✓	✓
		BPH 408	Pharmacognosy-III Practical	2019	✓	✓	✓
		BPH 409	Biopharmaceutics & Pharmacokinetics Practical	2019	✓	✓	✓
		BPH 410:	Novel Drug Delivery Systems	2019	✓		
		BPH 411	Pharmaceutical Biotechnology (Theory)	2019	✓		
		BPH 412:	Clinical Pharmacy & Therapeutics	2019	✓		
48		BPH 414	Project Work & Seminar	2019	✓	✓	✓
	M.Pharmacy						
		MPH 101A(Pharmacology)	General & Systemic Pharmacology	2019	✓		
		MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2019	✓		
		MPH 103	Practical I	2019	✓	✓	✓
		MPH 104	Practical-II(MAT)	2019	✓	✓	✓
		MPH 105	Modern Analytical Techniques and biostatistics Theory	2019	✓		
		MPH 106	Human Values and Professional Ethics-I	2019	✓		
		MPH 107	Comprehensive Viva	2019	✓	✓	✓
		MPH 201A (Pharmacology)	Molecular Pharmacology	2019	✓		
		MPH 202 A	Methods in Drug Evaluation	2019	✓		
		MPH 203	Practical I	2019	✓	✓	✓
		MPH 204	Practical-II(BPK)	2019	✓	✓	✓
		MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2019	✓		
48	M.Pharmacy						

	MPH 206	Human Values and Professional Ethics-II	2019	✓		
	MPH 207	Comprehensive Viva	2019	✓	✓	✓
	MPH 301	Mid-Term Evaluation of Research project	2019	✓	✓	✓
	MPH 401	Project thesis submission & presentation and Project Viva voce	2019	✓	✓	✓

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	
1	Adult & Continuing Education	MA AE 1.1	Alternative learning systems	2020			√	
		MA AE 1.2	Policy Studies In Adult/Continuing Education	2020				
		MA AE 1.3	Adult Psychology And Learning	2020			√	
		MA AE 1.4	Socio-Philosophical Foundation Of Adult Educa	2020				
		MA AE 1.5	Communication Methods in Adult Education	2020		√		
		MA AE 1.6	Human Values And Professional Ethics-I	2020				
		MAAE-2.1	Recent Trends In Adult And Continuing Education	2020				
		MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2020		√		√
		MAAE-2.3	Research Methods In Adult Education	2020		√		√
		MAAE-2.4	Field Work & Practical Assignments	2020		√		√
		MAAE-2.5	Management Of Adult/Continuing Education	2020				
		MAAE-2.6	Human Values And Professional Ethics-II	2020				
		MAAE-3.1	Training In Adult And Continuing Education	2020		√		√
		MAAE-3.2	Comparative Studies In Adult Education	2020				
		MAAE-3.3	Material Development For Adult& Continuing Education	2020				√
		MAAE-3.4A	Peoples' Participation And Development	2020		√		
		MAAE-3.4B	Vocational Education & Training	2020		√		
		MAAE-3.4C	Guidance And Counselling In Adult/Continuing Education	2020				
		MAAE-3.4D	Inclusive Education	2020				
		MAAE-3.5A	Information Technology For Continuing Education	2020				
		MAAE-3.5B	Entrepreneurship Development	2020		√	√	
		MAAE-3.5C	Women's Education & Development	2020				
		MAAE-4.1	Monitoring & Evaluation	2020		√		
		MAAE-4.2	Human Resources Management& Development	2020				√
		MAAE-4.3	Dissertation / Project Work	2020				
		MAAE-4.4 A	Environmental Education	2020				
		MAAE-4.4 B	Statistical Methods For Social Research	2020				√
		MAAE-4.4 C	Development Strategies & Voluntarism	2020		√		
		MAAE-4.4 D	Population Education	2020				
		MAAE-4.5 A	Adult Education And Extension	2020				
		MAAE-4.5 B	Skill Development Initiatives	2020				
		MAAE-4.5 C	Career Guidance And Counselling	2020				
		MARDM-1.3	Indian Economic Scene	2020	√			
		MARDM-2.1	Rural Industrialisation	2020	√		√	

		MARDM-2.3	Agriculture & Rural Bio Technology	2020			√
		MARDM2.4	Field Work& Practicals	2020			√
		MARDM-2.5	Rural Marketing & Management	2020		√	
		MARDM-3.1	Natural Resources Management -Land	2020	√		√
		MARDM3.2	Natural Resources Management -Water	2020	√		√
		MARDM-3.3	Natural Resources Management-Vegetation	2020	√	√	√
		MARDM-3.4a	Communications For Rural Development	2020			√
		MARDM3.4b	Micro Finance & Women Empowerment	2020	√		√
		MARDM-1.4c	Economics Of Agriculture	2020		√	
		MARDM3.5b	Skill Development Initiatives	2020			√
		MARDM-4.1	Agriculture And Rural Development	2020	√	√	
		MARDM-4.2	Rural Credit & Marketing	2020	√	√	
		MARDM4.3	Dissertation/Project Work	2020	√		√
		MARDM-4.1c	Rural Entrepreneurship	2020		√	
		MARDM- 4.1d	Vocational Education & Training	2020	√	√	√
		MARDM-5.1a	Human Resources Development In Rural Sector	2020	√		√
							√
	AIHC & Archaeology						
2	AIHC & Archaeology	AIHC&A-101	History of Ancient India upto 550 A.D.	2020			
		AIHC&A-102	History of India from 1206 A.D. to 1526 A.D.	2020			
		AIHC&A-103	History of Andhras upto 1323 A.D.	2020			
		AIHC&A-104	Ancient World Civilizations.	2020			
		AIHC&A-105A	Principles and Methods of Archaeology.	2020			√
		AIHC&A-105B	Advanced Archaeological Theory and Research Methodology	2020	√		
		AIHC&A-106A	Social and Political Institutions in Ancient India	2020			
		AIHC&A-106B	Indian Religious Movements.	2020			
		AIHC&A-107	Human Values and Professional Ethics-I.	2020			
		AIHC&A-201	History of India from 550 A.D to 1206 A.D.	2020			
		AIHC&A-202	History of Medieval India from 1526 A.D to 1707 A.D.	2020			
		AIHC&A-203	History of South India from 1323 A.D. to 1724 A.D.	2020			
		AIHC&A-204	Pre and Proto Historic Cultures of India	2020	√		
		AIHC&A-205A	History of Indian Archaeology	2020	√		√
		AIHC&A-205B	Cultural Heritage Management	2020			
		AIHC&A-206 A	India's Early Cultural Contacts with other Countries	2020			
		AIHC&A-206 B	Early History of South East Asia	2020			
		AIHC&A -207	Human Values and Professional Ethics-II	2020			
		AIHC&A-301	History of Indian Architecture	2020	√		

		AIHC&A-302	Epigraphy	2020			√
		AIHC&A-303A	History of Modern Andhra from 1724 A.D. to 1956 A.D.	2020			
		AIHC&A-303B	Historiography and Historical Method	2020			
		AIHC&A-303C	Laboratory Methods in Scientific Archaeology	2020			√
		AIHC&A-303D	Temple Studies	2020			
		AIHC&A-304	Soft Skills in Archaeology	2020	√		√
		AIHC&A-305A	Outlines of Indian History	2020			
		AIHC&A-305B	Women in Indian History	2020			
		AIHC&A-401	History of Indian Art	2020			√
		AIHC&A-402	Numismatics	2020			√
		AIHC&A-403A	Museology	2020			√
		AIHC&A-403B	Historical Applications in Tourism	2020	√		
		AIHC&A-403C	Tour Guiding and Management	2020	√		
		AIHC&A-403D	Conservation of Cultural Property	2020			√
		AIHC&A-404	History of Science and Technology in Ancient India	2020			
		AIHC&A-405A	Introduction to Indian Archaeology	2020			
		AIHC&A-405B	History of Vijayanagara Empire	2020			
3	Area Studies Programme	SEAP 104	Ancient Indian History	2020	√		
		SEAP 203	Regional Geography of South Pacific and East Asia	2020			√
		SEAP 303 A	India and the World	2020	√		
		SEAP 402 C	Developing Blue Economy	2020			√
	MA Tourism	T 102	Planning and Development of Tourism	2020	√		
		T 201	Historical Application of Tourism	2020	√		
		T 301	Travel Agency and Tour Operations Management	2020		√	√
		T 303	Airline Ticketing and Information Management	2020			√
4	Centre for Extension Studies						
5	Centre for Gandhian Studies						
6	Centre for Women's Studies	101	Introduction to Gender Studies	2020-21	√		
		102	Gender & Society	2020-21	√		√
		103	Women Movements in National & International Perspective	2020-21	√		√
		104	Research Methods and Statistics	2020-21	√	√	√
		105(a)	Gender, Environment, Climate change & Livelihood	2020-21	√	√	√
		105(b)	Social Process & Behavioural Issues	2020-21	√		√

105(c)	Gender and Education	2020-21	√		√
106	Human Values and Professional Ethics –I	2020-21	√	√	√
201	Development – Gender Perspectives	2020-21	√	√	√
202	Health & Nutrition Perspectives of Women	2020-21	√	√	√
203	Computer applications & Software packages	2020-21	√	√	√
204	Policies and Programmes for Women’s Development	2020-21		√	√
205(a)	Media and Governance – Gender Concern	2020-21	√	√	√
205(b)	Social Work Initiatives for Women’s Development	2020-21	√	√	√
205(c)	NGO Management	2020-21	√	√	√
206	Human values & Professional Ethics –II	2020-21			√
301	Feminist Theories	2020-21			√
302	Human Resource Management with focus on Gender Perceptions	2020-21	√	√	√
303	Internship Cum Seminar Presentation	2020-21	√		√
304(a)	Capacity Building and Leadership	2020-21	√	√	√
304(b)	Guidance and Counseling with Gender Perceptions	2020-21	√	√	√
304(c)	Gender Based Violence – Issues to concerns	2020-21			√
304(d)	Women, Science and Technology	2020-21	√	√	√
305(a)	Gender Sensitization and Training	2020-21	√	√	√
305(b)	Gender Identity and Leadership	2020-21	√	√	√
305(c)	Gender Perspective and Governance	2020-21	√	√	√
401	Entrepreneurship Management & Development	2020-21	√	√	√
402	Women’s Legislations – Gender Concerns	2020-21	√		√
403	Dissertation (Project work)	2020-21	√	√	√
404(a)	Participatory learning, Extension and outreach programmes and Advocacy with focus on Women	2020-21			√
404(b)	Multimedia Systems	2020-21	√	√	√
404(c)	Family Life Education	2020-21			√
404(d)	Women and Globalization	2020-21			√
405(a)	Gender and Human Rights	2020-21			√
405(b)	Gender and Mass Communication	2020-21	√	√	√
405(c)	Social Institutions and Gender Analysis	2020-21	√	√	√
7	Econometrics				
	EMT 101	Microeconomic Theory I	2020		
	EMT 102	Macroeconomic Theory I	2020		
	EMT 103	Mathematical Methods	2020		
	EMT 104	Practical I	2020		
	EMT 105	Statistical Methods	2020		
	EMT 106	Human Values and Professional Ethics –I	2020		√

EMT 201	Microeconomic Theory II	2020				
EMT 202	Macroeconomic Theory II	2020			√	
EMT 203	Basic Econometrics	2020				
EMT 204	Practical II	2020				
EMT 205	Mathematical Economics	2020				
EMT 206	Human Values and Professional Ethics II	2020				
EMT 301	Indian Economy	2020				
EMT 302	Economics of Insurance	2020				
EMT 303	Advanced Econometrics	2020			√	
EMT 304	Computer Applications and Data	2020				
	Analysis	2020				
EMT 305	Public Finance	2020			√	
EMT 306	Financial Institutions and Markets	2020				
EMT 307	Practical III	2020			√	
EMT 308	Introduction to Econometrics	2020				
EMT 309	Indian Economy	2020				
EMT 310	Economics of Insurance	2020				
EMT 401	International Trade and Finance	2020				
EMT 402	Environmental Economics	2020				
EMT 403	Applied Econometrics	2020				
EMT 404	Optimization Techniques in	2020				
	Economics	2020				
EMT 405	Time Series Econometrics	2020				
EMT 406	Practical IV	2020				
	Environmental Economics	2020				
EMT 407	Project	2020				
EMT 408	Optimization Techniques in	2020				
	Economics	2020				
EMT 409	Data Base for the Indian Economy	2020				
EMT 410	Actuarial Statistics	2020				
8	Economics	101	Micro-Economic Analysis – I	2020		
		102	Macro-Economic Analysis - I	2020		
		103	Public Economics	2020		
		104	Mathematical Methods in Economics	2020		
		105	Fundamentals of Computers	2020	√	√
				2020		
		106	Human Values and Professional Ethics - I	2020		
		201	Micro-Economic Analysis – II	2020		
		202	Macro-Economic Analysis - II	2020		

203	Federal Finance	2020			
204	International Trade: Theory and Policy	2020			
205	Statistical Methods in Economics	2020	√		√
206	Human Values and Professional Ethics - II	2020			
301	Economics of Growth and Development	2020			
302	Indian Economy	2020			
303	Economics of Environment	2020	√		
304(a).	International Finance	2020			
304(b).	Agricultural Economics	2020			
304(c).	Demography	2020	√		
304(d)	Human Resource Development	2020	√		
305(a).	Urban Economics	2020	√		
305(b).	Economics of Infrastructure	2020			
305(c).	Economics of Insurance	2020			
401	Rural Development	2020			
402	Financial Institutions and Markets	2020	√		
403	Industrial Economics	2020			
404(a)	India's Economic Reforms	2020			
404(b).	Andhra Pradesh Economy	2020			
404(c).	Entrepreneurship and Skill Development	2020	√		√
404(d).	Labour Economics	2020			
405(a).	Women and Economic Development	2020			
405(b).	Economics of Tourism	2020	√	√	
405(c).	Tribal Economy	2020			
9	Education				
101	Perspectives of Educational Psychology	2020	✓		✓
102	Educational Studies	2020	✓		✓
103	Fundamentals of Educational Research	2020	✓	✓	✓
104	Teacher Education	2020	✓	✓	✓
105	Foundations of Educational Philosophy	2020	✓		✓
106	Measurement and Evaluation	2020	✓	✓	✓
201	Educational Planning and Management	2020	✓		✓
202	Advanced Educational Research	2020	✓	✓	✓
203	Guidance and Counseling	2020	✓	✓	✓
204	Issues and Research in Teacher Education	2020	✓	✓	✓
205	Foundations of Educational Sociology	2020	✓		✓
206	Secondary Education	2020	✓		✓
301	Information and Communication Technology in Education	2020	✓	✓	✓
302	Comparative Education	2020	✓		✓
303	Inclusive Education	2020	✓	✓	✓
304-C	Environmental Education	2020	✓		✓
304-D	Life Skills Education	2020	✓	✓	✓
305-A	Teaching Strategies for Teachers	2020	✓	✓	✓

		401	Advanced Educational Technology	2020	✓		✓
		402	Psychology – Learner and Life	2020	✓	✓	✓
		403	Environmental Concerns in Secondary Education	2020	✓		✓
		404-A	Human Values and Professional Ethics	2020	✓	✓	✓
		404-B	Lifelong Education	2020	✓		✓
		405-A	Personality Development and Soft Skills	2020	✓	✓	✓
		301	Information and Communication Technology in Education	2020	✓	✓	✓
		302	Comparative Education	2020	✓		✓
		303	Inclusive Education	2020	✓	✓	✓
		304-C	Environmental Education	2020	✓		✓
		304-D	Life Skills Education	2020	✓	✓	✓
		305-A	Teaching Strategies for Teachers	2020	✓	✓	✓
		401	Advanced Educational Technology	2020	✓		✓
		402	Psychology – Learner and Life	2020	✓	✓	✓
		403	Environmental Concerns in Secondary Education	2020	✓		✓
		404-A	Human Values and Professional Ethics	2020	✓	✓	✓
		404-B	Lifelong Education	2020	✓		✓
		405-A	Personality Development and Soft Skills	2020	✓	✓	✓
10	English	105	English Language	2020	✓		
		205	English Language Teaching	2020	✓		✓
		305 D	Indian Literature in English	2020	✓		✓
		305 (A)	Communicative English	2020			✓
		305(B):	English for Media	2020	✓		✓
		305(C):	An Introductory Course to Literature	2020	✓		
		404(A):	Translation: Theory and Practice	2020	✓		
		405(A)	Soft Skills	2020	✓		✓
11	Foreign Languages and Linguistics	LING-101	Language and Linguistics	2020	√	√	√
		LING-102	Phonetics	2020		√	
		LING-103	Phonology	2020		√	
		LING-104	Morphology	2020		√	
		LING-105	Syntax	2020		√	
		LING-201	Semantics	2020		√	
		LING-203	Dialectology	2020		√	
		LING-204	Field Linguistics	2020	√	√	√
		LING-205	Language families of India and Comparative Dravidian(Phonology)	2020		√	
		LING-206	Human Values Professional Ethics-II	2020	√	√	√
		LING-301	Sociolinguistics	2020	√	√	
		LING-302	Language Contact	2020	√	√	

		LING-303	Communication Disorders and Speech Pathology	2020	√	√	√
		LING-304A	Psycho-linguistics	2020	√	√	√
		LING-304B	Communication Technology	2020	√	√	√
		LING-304C	Endangered Languages	2020			
		LING-304D	Computational Linguistics	2020	√	√	√
		LING-305B	Bilingualism	2020	√	√	√
		LING-305C	Structure of English	2020	√	√	√
		LING-401	Language Acquisition and Child Language Development	2020	√	√	√
		LING-404B	Language Teaching	2020	√	√	√
		LING-404C	Translation	2020	√	√	√
		LING-404E	Corpus Linguistics	2020	√	√	√
		LING-405A	Branches of Linguistics	2020	√	√	
		LING-405C	Mass Media Communication	2020	√	√	√
12	Hindi	HIN-101	Aadhunik Hindi Kavita	2020			
		HIN-102	Hindi Gadhya Sahitya	2020			
		HIN-103	Bhasha Vignan	2020	√		
		HIN-104	Anuvad Vignan aur Paribhashik Shabdavali	2020	√		
		HIN-105	Hindi Sahitya Ka Ithihas	2020			
		HIN-106	Human Values & Professional Ethics-	2020			
		HIN-201	Samkaleen Hindi Kavita	2020			
		HIN-202	Hindi Ka Vaicharik Sahitya	2020			
		HIN-203	Hindi Bhasha	2020			
		HIN-204	Prayojanmulak Hindi	2020	√		√
		HIN-205	Aadhunik Hindi Sahitya Ka Ithihas	2020			
		HIN-303 D	Pravasi Sahitya	2020	√		
		HIN-304	Bhasha Shikshan ke Sidhantaaur Prayog	2020	√		
		HIN-305 A	Vyavharik Hindi Vyakaran	2020	√		
		HIN-305 B	Hindi Sahitya ke Nirmata	2020			
		HIN-401	Bhartiya Tulnatmak Sahitya	2020	√		
		HIN-402	Paschatya Samiksha Shastra	2020			√
		HIN-403 A	Anudit Bhartiya Sahitya	2020			√
		HIN-403 B	Asmitamulak Sahitya Vimarsha	2020			
		HIN-403 C	Sahitya ka Tulnatmak Adhayayan	2020	√		√
		HIN-403 D	Anusandhan ke Sidhanta aur Dristiya	2020			√
		HIN-404	Antar Jananushasnatmak Dristiyaaur And Pravidhiya	2020			
		HIN-405 A	Manak Hindi aur Nagrilipi	2020			√
		HIN-405 B	Aadhunik Hindi Sahitya ke Nirmata	2020			

13	History	HST -101	Historical Method and Concepts	2020			
		HST 102	History of Modern World, C.1900-1945	2020			
		HST 103	History of India Up to AD 650	2020			
		HST 104	History of Indian Polity and Economy, 1206-1757	2020	✓		
		HST 105	Political History of India, 1757-1857	2020			
		HST 106	Human Values and Professional Ethics- I	2020			
		HST 201	Historiography	2020			
		HST 202	History of Contemporary World, C.1945-2000	2020	✓		
		HST 203	History of India, AD 650-1206	2020			
		HST 204	Social and Cultural History of India, 1206-1757	2020	✓		
		HST 205	Social and Economic History of India, 1757-1857	2020			
		HST 206	Human Values and Professional Ethics-II	2020			
		HST 301	History of South Indian,1323-1724	2020			
		HST 302	Contemporary History of India-I	2020	✓		
		HST 303	History of USA, 1776- 1965	2020			
		HST 304 a	History of Andhra, 1766- 1857	2020			
		HST 304 b	Theoretical Concepts of Tourism	2020	✓		
		HST 304 c	Women Studies in Modern India	2020			
		HST 304 d	History of World Civilizations-1	2020	✓		
		HST 305 a	Indian Foreign Policy: An Introduction	2020	✓		
		HST 305 b	Constitutional History of India, 1773- 1950	2020	✓		
		HST 401	Freedom Movement in India, 1857 – 1947	2020	✓		
		HST 402	Contemporary History of India- II	2020			
		HST 403	History ofUSA,1865-1963	2020	✓		
		HST 404 a	History of Andhra, 1857 - 1972	2020			
		HST 404 b	Historical Application of Tourism in India	2020	✓		
		HST 404 c	Environmental History of Modern India	2020			
		HST 404 d	History of World Civilizations -II	2020			
		HST 405 a	International Relations and Organizations	2020	✓		
		HST 405 b	An Introduction to Indian Art	2020			
14	Human Rights and Social Development	HR – 101	HUMAN RIGHTS: CONCEPTS AND THEORETICAL PERSPECTIVES	2020			
		HR – 102	HUMAN RIGHTS IN INDIA THE CONSTITUTIONAL AND LEGAL FRAMEWORK	2020	✓		
		HR – 103	HUMAN AND THE IMPLEMENTATION MACHINERY	2020	✓		✓

HR – 104	RIGHTS AND THE IMPLEMENTATION MACHINERY	2020			
HR – 105 (A)	WORKING CLASS AND HUMAN RIGHTS AND DUTIES	2020	✓		
HR – 105 (B)	HUMAN RIGHTS EDUCATION, TEACHING AND TRAINING	2020	✓		✓
HR – 106 (A)	HUMAN RIGHTS ACTIVISM AND ROLE OF NGOs	2020	✓		✓
HR – 106 (B)	SOCIAL MOVEMENTS AND HUMAN RIGHTS IN INDIA	2020	✓		
HR - 107	HUMAN MOVEMENTS AND HUMAN RIGHTS IN INDIA	2020			
HR – 201	HUMAN RIGHTS AND INDIAN POLITY	2020			
HR – 202	EMERGIN DIMENSIONS OF HUMAN RIGHTS	2020			
HR – 203	HUMAN RIGHTS : THE INTERNATIONAL CONTEXT	2020	✓		
HR – 204	RESEARCH METHODOLOGY, STATICS AND COMPUTER	2020	✓		✓
HR – 205 (A)	HUMAN RIGHTS – THE SOCIO ECONOMIC CONTEXT	2020			
HR – 205 (B)	SOCIETAL PROBLEMS OF HUMAN RIGHTS IN INDIA	2020			
HR – 206 (A)	HUMAN RIGHTS AND CRIMINAL JUSTICE SYSTEM	2020	✓		✓
HR – 206 (B)	MEDIA AND HUMAN RIGHTS	2020	✓		✓
HR – 301	SOCIAL MOVEMENTS AND HUMAN RIGHTS AND DUTIES	2020			
HR – 302	SCIENCE, TECHNOLOGY, HUMAN RIGHTS AND DUTIES	2020	✓		
HR – 303 (A)	HUMNA RIGHTS AND DUTIE – ADVOCACY AND EXTENSION WORK AND VIVA – VOCE	2020	✓		
HR – 303 (B)	SOICALLY / ECONOMICALLY DISADVANTAGED PEOPLE AND HUMAN RIGHS AND DUTIES	2020			
HR – 303 (C)	HUMAN DUTIES AND RESPONSIBILITIES	2020			
HR – 303 (D)	CHILDREN AND HUMAN RIGHTS AND DUTIES	2020			
HR – 304	SOFT SKILLS	2020	✓		✓
HR – 305 (A)	HISTROICAL AND PHILOSOPHICAL PERPECTIVS AND HUMAN RIGHTS	2020			

		HR – 305 (B)	HUMAN RIGHTS AND DUTIES IN INDIA	2020	✓		
		HR – 401	human rights in andhra pradesh	2020			
		HR – 402	development, trade and human rights	2020			
		HR – 403 (A)	international, humanitarian and refugee laws	2020			
		HR – 403 (B)	environment and human rights and duties	2020	✓		
		HR – 403 (C)	human rights and criminal justice system	2020			
15	Law	LAW-101	Mass Media Law	2020	✓	✓	✓
		LAW-102	Public Utilities Law	2020		✓	✓
		LAW103	Law and Social Transformation in India	2020	✓	✓	✓
		LAW-104	Indian Constitutional Law, The New Challenges.	2020	✓	✓	✓
		LAW-201	Union State Finance Relations	2020	✓	✓	✓
		LAW-202	Constitutionalism, Pluralism and Federalism	2020	✓	✓	✓
		LAW-203	Judicial Process	2020	✓	✓	✓
		LAW-204	Legal Education and Research Methodology	2020	✓	✓	✓
		LAW-301	Human Rights	2020	✓	✓	✓
		LAW-302	National Security, Public Order and Rule of Law	2020	✓	✓	✓
		LAW-303	Practical Training	2020	✓	✓	✓
		LAW-304 a	Environment Protection and the Law	2020	✓	✓	✓
		LAW-304b	Intellectual Property Rights Law	2020	✓	✓	✓
		LAW-305 a	Cyber Crimes and Law	2020	✓	✓	✓
		LAW305 b	Evolution and Concept of ADR	2020	✓	✓	✓
		LAW401	Dissertation and Viva- Voce	2020	✓	✓	✓
		LAW-402 a	Law and Consumer Protection	2020	✓	✓	✓
		LAW -402 b	International Human Rights (MOOC/Online)	2020	✓	✓	✓
16	Library and Information Science	Lis-101	Foundation of Library and Information Science	2020			✓
		Lis-102	Knowledge Organization : Classification Theory	2020	✓		✓
		Lis-103	Knowledge Organization : Classification Practice	2020	✓		✓
		Lis-104	Knowledge Management	2020		✓	✓
		Lis-105	Introduction to Information Technology	2020	✓		✓
		Lis-106	Human Values and Professional Ethics – I	2020			✓
		Lis-201	Information Sources and Services	2020			✓
		Lis-202	Knowledge Organization : Cataloguing Theory	2020	✓		✓
		Lis-203	Knowledge Organization : Cataloguing Practice	2020	✓		✓
		Lis-204	Meta Data Standards – Practice	2020	✓		✓
		Lis-205	Library Management	2020	✓		✓

		Lis-206	Human Values and Professional Ethics – II	2020			✓
		Lis-301	Information Processing and Retrieval Theory	2020	✓		✓
		Lis-302	Library Automation and Digital Library	2020	✓		✓
		Lis-303	Search and search strategies	2020			✓
		Lis-304A	User Studies	2020			
		Lis-304B	Internship	2020	✓		✓
		Lis-304C	Academic Library System	2020	✓		✓
		Lis-304D	Special Library System	2020	✓		✓
		Lis-305A	Information Literacy	2020			✓
		Lis-305B	Information and Communication	2020			✓
		Lis-401	Research Methodology	2020			✓
		Lis-402	Software for Libraries-Practice	2020	✓		✓
		Lis-403	Dessertation/Project Work	2020	✓		✓
		Lis-404A	Management of Information System	2020			✓
		Lis-404B	Museums and Archives	2020			
		Lis-404C	Information Processing and Retrieval:UDC and Indexing Practice	2020	✓		✓
		Lis-404 D	Marketing of Information Products and Services	2020			✓
		Lis-405 A	Information Systems and Programmes	2020			✓
		Lis-405B	Technical Writing	2020			✓
17	Mass Communication & Journalism						
18	Performing Arts						
		PAM-105 (P)	Compulsory Foundation in Music -1	2020			✓
		PAM-105 (P)	Compulsory Foundation in Music -1	2020			✓
		PA-M 204 (P)	Vilambakala Kritis	2020	✓		✓
		PA-M 205 (p)	Compulsory Foundation in Music -2	2020			✓
		PA-M 302	Compositions in Rare ragas	2020	✓		✓
		PA-M 303	Concert	2020	✓	✓	✓
		PA-M 402	Ragam Tanam Pallavi	2020	✓		✓
		PA-M 403	Project work	2020	✓		✓
		PA-M 404A	Manodharma Sangeetha	2020	✓		✓
		PA-M 404C	Compositions of Dance Repertoire	2020	✓	✓	✓
19	Philosophy						
		PHL- 101	Logic: Indian and Western	2020			✓
		PHL -102	Epistemology – Indian	2020			
		PHL -103	Classical Indian Philosophy	2020	✓		✓
		PHL -104	Problems in Metaphysics	2020			
		PHL -105	Western Philosophy: Greek and Medieval	2020			
		PHL -106	Human Values and Professional Ethics -I	2020			
		PHL- 201	Ethics – Indian	2020	✓		
		PHL- 202	Ethics – Western	2020	✓		

		PHL- 203 - A	Modern Indian Thought	2020			
		PHL- 203 - B	Modern Western Philosophy	2020			
		PHL- 203 - C	Nyaya Sutras	2020			✓
		PHL- 204	Philosophy of Education	2020			
		PHL- 205	Human Values and Professional Ethics -II	2020			
		PHL- 301	Social and Political Philosophy	2020	✓		✓
		PHL- 302	Analytical Philosophy	2020	✓		
		PHL- 303	Philosophy of Vedanta	2020	✓		
		PHL- 304 - A	Philosophical Approach to Gandhi	2020			
		PHL- 304 - B	Philosophy of B.R Ambedkar	2020	✓		
		PHL- 304 - C	Philosophy of Religion	2020			
		PHL- 305- A	Philosophy of Yoga	2020		✓	✓
		PHL- 305- B	Eco - Philosophy	2020			✓
		PHL- 401	Phenomenology and Existentialism	2020			✓
		PHL- 402	Comparative Religion	2020			✓
		PHL- 403	Sri Vaishnavism	2020			
		PHL- 404 - A	Philosophy of Peace	2020	✓		✓
		PHL- 404 - B	Research Methodology and Computer Applications	2020	✓		✓
		PHL- 404 - C	Introduction to Philosophy of Mind	2020			
		PHL- 405 - A	Sri Venkateswara Studies	2020			
		PHL- 405 - B	Philosophy of Value Education	2020	✓		
20	Physial Education						
		CC-101	History, Principles and foundations of Physical Education	2020			
		CC-102	Anatomy and Physiology	2020			
		CC-103	Educational Technology and Methods of Teaching in Physical Education	2020		✓	✓
		EC-111	Communication & Soft skills	2020			
		EC-112	Olympic Movement	2020			✓
		PC-121	Track and Field (Running Events), *Gymnastics/*Swimming (* Any one)	2020			✓
		PC-122	Football, Tennis, Throwball	2020		✓	✓
		PC-123	Badminton, Kho-Kho, Shooting	2020		✓	✓
		PC-124	Mass Demonstration Activities: Flag Hoisting, March past, Calisthenics, Lezium	2020			
			Dumb-bells, Kolatam, Aerobics				
			Wands, Hoops, Pole Drill, Folk Songs & Patriotic Songs				
		CC-201	Kinesiology and Biomechanics	2020		✓	✓
		CC-202	Health Education and Environmental Studies	2020			✓

		CC-203	Measurement and Evaluation in Physical Education	2020			✓
		EC-211	Computer Applications in Physical Education	2020			
		EC-212	Recreation and Leisure Management	2020			
		PC-221	Track and Field (Jumping Events)	2020			
			* Gymnastics/*Swimming (* Any one)				✓
							✓
		PC-222	Yoga, Ball Badminton, Kabaddi	2020			✓
		PC-223	Hockey, Handball, Cricket	2020			✓
		TP-231	Teaching Practice (Class room and Outdoor)	2020			✓
				(4 internal and 1 External in class room and outdoor)			
21	Political Science & Public Admi						
		PSPA 101	Constitution Making - Indian Experience	2020	✓	✓	✓
		PSPA 105 (b	Indian Political Thought	2020	✓	✓	
		PSPA 103	Modern Political Analysis	2020	✓	✓	✓
		PSPA105 (c)	Public Relations& Mass Communication	2020	✓	✓	✓
		PSPA106 (a)	Dynamics of Public Administration	2020	✓	✓	✓
		PSPA106 (b)	Globalization and Indian Political Economy	2020	✓	✓	✓
		PSPA 201	Administrative Theories	2020		✓	✓
		PSPA 202	Research Methodology	2020	✓	✓	✓
		PSPA 203	Indian Government and Politics	2020	✓	✓	✓
		PSPA 204	Public Policy	2020	✓	✓	✓
		PSPA205 (a)	Indian National Movement	2020	✓	✓	✓
		PSPA205 (b)	Public Enterprises in India	2020	✓	✓	✓
		PSPA 205 (c)	Administrative Techniques	2020	✓	✓	✓
		PSPA 206 (b)	International Administration	2020	✓		✓
		PS303(a)	Good Governance and Information Technology	2020	✓	✓	✓
		PS 304	Personality Development and Employment	2020	✓	✓	✓
		PS305(a)	Social Movements in India	2020	✓		
		PA 301	Public Personnel Administration	2020	✓		✓
		PA303(b)	Issues in Indian Administration	2020	✓		✓
		PA303(d)	Political Dynamics	2020		✓	✓
		PA 305(b)	Indian Polity and Governance	2020	✓	✓	✓
		PS 401	India's Foreign Policy-Continuity,	2020	✓		✓
			Changes and Emerging Challenges	2020			
		PS 402	Center-State Relations in India	2020	✓		✓
		PS 403(b)	E-Governance	2020	✓	✓	✓
		PS 405(b)	Women and Politics	2020	✓	✓	✓
		PA 401	Human Resource Management	2020	✓	✓	✓

		PA 402	Financial Administration	2020	✓	✓	✓
		PA 403(c)	Disaster Management	2020	✓	✓	✓
		PA 403(d)	Office Management	2020	✓	✓	✓
		PA 405(a)	Indian Constitution	2020	✓		
		PA 405(b)	Banking Management	2020	✓	✓	✓
22	Population Studies	PSC-101	Population Characteristics and Theories	2020	✓		✓
		PSC-102	Fertility	2020	✓		✓
		PSC-103	Mortality	2020	✓		✓
		PSC-104	Sources, Evaluation and Adjustment of Data	2020	✓	✓	✓
		PSC-105	Population Education and Extension	2020	✓		✓
		PSC-106	Human Values & Professional Ethics-I	2020			✓
		PSC - 201	Migration and Multi Regional Demography	2020			✓
		PSC - 202	N.G.O Management	2020	✓	✓	✓
		PSC - 203	Statistical Methods	2020	✓	✓	✓
		PSC - 204	Population Sociology	2020	✓		✓
		PSC – 205	Population and Sustainable Development	2020	✓		✓
		PSC - 206	Human Values and Professional Ethics -II	2020			✓
		PSC - 301	Population Geography	2020	✓	✓	✓
		PSC - 302	Research Methodology	2020	✓	✓	✓
		PSC - 303	Community Health	2020	✓		✓
		PSC – 304 A	Population Psychology	2020	✓		✓
		PSC – 304 B	Population Policies and Programmes	2020	✓		✓
		PSC – 304 C	Gerontology	2020	✓	✓	✓
		PSC – 304 D	Population and Sustainable Developemnt	2020	✓		
		PSC – 305 A	Principles of Population Studies	2020	✓		
		PSC – 305 B	Population, Society and Environment	2020	✓		✓
		PSC - 401	Communication For Family Welfare Programmes	2020	✓		✓
		PSC - 402	Reproductive Health and Adolescent Issues	2020	✓		✓
		PSC - 403	Population Growth and Development	2020	✓		
		PSC – 404 A	Field Work Practice and Dissertation	2020	✓	✓	✓
		PSC – 404 B	Demography of Andhra Pradesh	2020	✓		
		PSC – 404 C	Social Work in Industry and Human Resource Management	2020	✓		✓
		PSC – 404 D	Health Economics	2020	✓		✓
		PSC – 405 A	Rural, Urban, Tribal Development	2020	✓		✓
		PSC – 405 B	Social policies and planning	2020	✓		✓
	Social Work	MSW-101	Sociology for Social Work	2020	✓		
		MSW-102	Human growth and Personality Development	2020	✓		✓
		MSW-103	Social Work Profession & Field Work Orientation-1	2020	✓	✓	✓

MSW-104	Social Work practice with Individuals & Groups	2020	✓		✓
MSW-105	Social Work Practicum-I	2020			✓
MSW-106	Human Values & Professional Ethics-I	2020			✓
MSW - 201	Social Work Profession and Field Work Orientation-II	2020	✓	✓	✓
MSW - 202	Social Work Practice with Communities	2020	✓	✓	✓
MSW - 203	Social Action and Social Legislation for Social Work Practice	2020	✓		✓
MSW - 204	Social Policy and Planning	2020	✓		✓
MSW – 205	Social Work Practicum-II	2020			✓
MSW - 206	Human Values and Professional Ethics -II	2020			✓
MSW - 301	Social Work Intervention With Families	2020	✓		✓
MSW - 302	Social Work in the Field of Health	2020	✓		✓
MSW - 303	Counseling in Social Work Practice	2020	✓	✓	✓
MSW - 304 A	Social work Research	2020	✓	✓	✓
MSW – 304 B	Gerontological Social Work	2020	✓	✓	✓
MSW – 304 C	Social Work Practicum-III	2020			✓
MSW – 304 D	Human Rights and Social Legislation	2020	✓	✓	✓
MSW – 305 A	Principles of Population Studies	2020	✓		✓
MSW – 305 B	Fundamentals of Social Work	2020	✓	✓	✓
MSW - 401	Social Work Intervention With Children	2020	✓		✓
MSW - 402	Rural/Urban/Tribal Development & Empowerment -I	2020	✓		✓
MSW - 403	Social Work in the Field of Mental Health	2020	✓		✓
MSW – 404 A	Social work in industry & human resource Management	2020	✓		✓
MSW – 404 B	Social Work Practicum-IV	2020			✓
MSW – 404 C	Social Work Practicum-V	2020			✓
MSW – 404 D	Social Work and Disaster Management	2020	✓		✓
MSW – 405 A	Rural, Urban, Tribal Development	2020	✓		✓
MSW – 405 B	Social policies and planning	2020	✓		✓
23	Sanskrit				
	SNSKT 101	Elements of Darsanas-I	2020		
	SNSKT 102	Vedic Texts-I	2020	✓	
	SNSKT 103	Prose And Poetry –I	2020		
	SNSKT 104	Drama, Alankara and Prosody-I	2020		
	SNSKT 105	History of Sanskrit Literature-I	2020		
	SNSKT 106	Human Values and Professional Ethics-I	2020		
	SNSKT 201	Elements of Darsanas-II	2020	✓	
	SNSKT 202	Vedic Texts-II	2020	✓	
	SNSKT 203	Prose And Poetry –II	2020		
	SNSKT 204	Drama, Alankara and Prosody-II	2020		
	SNSKT 205	History of Sanskrit Literature-II	2020		
	SNSKT 206	Human Values and Professional Ethics-II	2020		
	SNSKT 301	(Sahitya)-Rasagangadhara-I	2020		

		SNSKT 302	(Sahitya)-Dhvanyaloka-I	2020			
		SNSKT 303	(Sahitya)-Kavyaśakasa or Viammata and	2020			
		SNSKT 304(A)	Comparative Etymology And Siddhanta Kamudi I	2020			
		SNSKT 304(B)	History of Sanskrit Poetics And Sanskrit Essay	2020			
		SNSKT 304©	Natyasastram	2020	✓		✓
		SNSKT 401	(Sahitya)-Rasagangadhara-II	2020			
		SNSKT 402	(Sahitya)-Dhvanyaloka-II	2020			
		SNSKT 403	(Sahitya)-Kavyaśakasa or Viammata and	2020	✓		
		SNSKT 404(A)	Comparative Etymology And SiddhantaKamudi II	2020			
		SNSKT 404(B)	History of Sanskrit Poetics And Sanskrit Essay	2020			
		SNSKT 404(C)	Kavyadarsah	2020			
24	Sociology						
		MASO-102	Sociological Research methods	2020	✓	✓	
		MASO-104	Participatory Research	2020	✓	✓	
		MASO-201	Applied Sociology	2020	✓	✓	
		MASO-203	Rural Sociology and Development	2020	✓	✓	
		MASO-204	Extension Work	2020	✓	✓	
				2020	✓	✓	
		MASO-205	Environmental Sociology	2020	✓	✓	
		MASO-301	Medical Sociology	2020	✓	✓	
		MASO-303	Field work and Extension work (village Placement)	2020	✓	✓	
		MASO-304-A	Human Rights	2020	✓	✓	
		MASO-304-C	Gerontology	2020	✓	✓	
		MASO-305-A	Social psychology and personanty Development	2020	✓	✓	
		MASO-401	Criminology	2020	✓	✓	
		MASO-402	Industrial Dynamics	2020	✓	✓	
		MASO-403	Field Work	2020	✓	✓	
		MASO-404-A	Social Welfare and Welfare Adminstration	2020	✓	✓	
		MASO-405	Globalisation and Educational Pursuits	2020	✓	✓	
25	Tamil						
		TML 101	Modern Literature	2020	✓		
		TML 104	Principle of Literary Criticism - I	2020	✓		
		TML 201	Modern Literature - II	2020	✓		
		TML 204 A	Feminism	2020	✓		
		TML 303	General Linguistics	2020	✓		
		TML 304D	Folk Arts in Tamil	2020			✓
		TML 403	Comparative grammar of Dravidian Languages and History of Tamil Language	2020	✓		
		TML 404D	Folk Festivals	2020			✓
26	Telugu Studies						
		102	General Linguistics	2020	✓		
		105	Folk Literature	2020	✓		✓
		303	Journalism	2020	✓		
		304A	Fiction: Novel & Short Stories	2020			
		305b	Adhunika Moulikamsalu	2020	✓		
		202	Dialectology	2020			✓

		205	Folk Arts	2020			✓
		404d	Comparative Literature	2020	✓		
		405a	Folk Lore	2020	✓		✓
27	Urdu	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2020	✓		✓
		URD 304 D	Urdu Computer	2020	✓	✓	✓
		URD 404 A	Urdu Tarjuma Nigari	2020	✓		✓
		URD 404 D	Urdu Tarseel o Iblag ke Zaraye	2020	✓		✓
			SVU COLLEGE OF SCIENCES				
28	Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2020	✓		✓
		ANO : 102	Introduction to Biological Anthropology	2020	✓		✓
		ANO-103	Introduction to Archaeological Anthropology	2020	✓		✓
		ANO-104P	Somatometry & Somatoscopy	2020	✓		✓
		ANO 105p	Archaeological Anthropology	2020	✓		✓
		ANO 106	Economic and Political Anthropology	2020	✓		✓
		ANO 107	Human Values and Professional Ethics -I	2020	✓		✓
		ANO 201	Comparative Ethnography and Indian Anthropology	2020	✓		✓
		ANO 202	Principals of Genetics	2020	✓		✓
		ANO 203	Research Methods in Anthropology	2020	✓		✓
		ANO 204P	Craniology and Craniometry	2020	✓		✓
		ANO205P	Doing Ethnography	2020	✓		✓
		ANO206	Prehistoric India	2020	✓		✓
		ANO 207	Human Values and Professional Ethics -II	2020	✓		✓
		ANB 301	Human Evolution and Fossil Evidence	2020	✓		✓
		ANB 302	Human Genetics	2020	✓		✓
		ANB 303P	Human Osteology and Osteometry	2020	✓		✓
		ANB 304P	Dermatoglyphics	2020	✓		✓
		ANB 305	Anthropological Demography	2020	✓		✓
		ANB 306	Biostatistics and Computer Applications	2020	✓	✓	✓
		ANB 307	Forensic Anthropology	2020	✓	✓	✓
		ANB 308	Palaeoanthropology	2020	✓		✓
		ANB 401	Biological Anthropology	2020	✓		✓
		ANB-402	Human Population Genetics	2020	✓		✓
		ANB-403P	Advanced Biological Anthropology	2020	✓		✓
		ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2020	✓		✓
		ANB -405	Human Growth, Physique and Nutrition	2020	✓		✓
		ANB 406	Applied Biological Anthropology	2020	✓	✓	✓
		ANB 407	Medical Genetics	2020	✓	✓	✓
		ANB-408	Epidemiology	2020	✓	✓	✓
		ANB -409	Human Ecology	2020	✓		✓
		ANS 301	Theories of Culture	2020	✓		✓
		ANS 302	Social Anthropology of Complex Societies	2020	✓		✓
		ANS 303P	Participatory or research methods in Non-Governmental Organizations and Extension studies	2020	✓		✓
		ANS 304P		2020	✓		✓

✓
✓
✓
✓

		ANS 305	Ecological Anthropology	2020	✓		✓
		ANS 306	Applied Anthropology- indigenous	2020	✓		✓
		ANS 307	Anthropology of Kengion sacred complexes in India	2020	✓		✓
		ANS 308	Anthropology and Career Promotion	2020	✓		✓
		ANS 401	Structural Anthropology	2020	✓		✓
		ANS-402	Medical Anthropology	2020	✓	✓	✓
		ANS-403P	Computer Applications	2020	✓	✓	✓
		ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2020	✓		✓
		ANS -405	Developmental Anthropology	2020	✓		✓
		ANS 406	Culture and Management	2020	✓		✓
		ANS 407	Anthropology of Displaced Populations	2020	✓		✓
		ANS-408	Visual Anthropology	2020	✓		✓
		ANS -409	Urban Anthropology	2020	✓		✓
29	Biochemistry	101	Biochemical and Biophysical methods	2020	✓	✓	✓
		102	Molecular Physiology and community nutrition	2020	✓	✓	
		103P	Practical related to Biochemical Preparations and Analysis	2020	✓	✓	✓
		104P	Practical related to Analytical methods	2020	✓	✓	✓
		105	Cell and Biomolecules	2020		✓	
		106	Human values and Professional ethics-1	2020	✓		
		201	Energy metabolism	2020		✓	
		202	Metabolism of Nitrogen based molecules	2020		✓	
		203P	Practical related to Enzymology	2020	✓	✓	✓
		204P	Practical related to Molecular Biology	2020	✓	✓	✓
		205	Human values and Professional ethics-11	2020	✓		
		206	Enzymology	2020	✓	✓	✓
		301	Microbial Biochemistry and Genetics	2020	✓	✓	✓
		302	Molecular Biology	2020	✓	✓	✓
		303P	Practical related to Microbiology	2020	✓	✓	✓
		304P	Practical related to Clinical Biochemical Analysis	2020	✓	✓	✓
		305GE	a) Molecular Endocrinology	2020	✓	✓	
		305GE	b) Clinical Biochemistry	2020	✓	✓	✓
		305GE	c) Cell and Developmental Biology	2020		✓	
		306OE	a) General Biochemistry	2020	✓	✓	
		306OE	b) Environmental Biochemistry	2020	✓	✓	✓
		306OE	c) Experimental aspects related to analytical methods	2020	✓	✓	✓
		401	Genetic Engineering	2020	✓	✓	✓
		402	Technical Writing, Biostatistics and Bioinformatics	2020	✓	✓	✓
		403P	Practical related to immunology and Hematology	2020	✓	✓	✓
		404P:	Practical/Project work	2020	✓	✓	✓
		405 GE	a) Immunology	2020	✓		
		405 GE	b) Applied Biochemistry	2020	✓	✓	✓
		405GE	c) Plant Biochemistry	2020	✓	✓	
		406 OE	a) Research Methodology	2020	✓	✓	✓
		406 OE	b) Biochemistry of diseases	2020	✓	✓	✓
		406 OE	c) Nutritional Biochemistry	2020	✓	✓	✓

	Immunotechnology	Core 1	Biochemical and Biophysical methods	2020	✓	✓	✓
		Core 2	Molecular Physiology and community nutrition	2020	✓	✓	
		Core 3	Practical related to Biochemical Preparations and Analysis	2020	✓	✓	✓
		Core 4	Practical related to Analytical methods	2020	✓	✓	✓
		Compulsory Foundation	Cell and Biomolecules	2020		✓	
		Elective foundation	Human values and Professional ethics-I	2020	✓		
		Core 1	Energy metabolism	2020		✓	
		Core 2	Metabolism of Nitrogen based molecules	2020		✓	
		Core 3	Practical related to Enzymology	2020	✓	✓	✓
		Core 4	Practical related to Molecular Biology	2020	✓	✓	✓
		Compulsory Foundation	Enzymology	2020	✓	✓	✓
		Elective foundation	Human values and Professional ethics-II	2020	✓		
		Core 1	Microbial Biochemistry and Genetics	2020	✓	✓	✓
		Core 2	Immunology	2020	✓		
		Core 3	Practical related to Microbiology	2020	✓	✓	✓
		Core 4	Practical related to Immunology	2020	✓	✓	✓
		Generic Elective	a) Molecular Biology	2020	✓	✓	✓
		Generic Elective	b)Molecular Endocrinology	2020	✓	✓	
		Generic Elective	c) Cell and Developmental Biology	2020		✓	
		Open Elective	a) Basics of Immunology	2020	✓		
		Open Elective	b) Immunotechniques	2020	✓	✓	✓
		Core 1	Genetic Engineering	2020	✓	✓	✓
		Core 2	Technical Writing, Biostatistics and Bioinformatics	2020	✓	✓	✓
		Core 3	Practical related to Clinical Immunology, biostatistics and bioinformatics	2020	✓	✓	✓
		Core 4	Practical/Project work	2020	✓	✓	✓
		Generic Elective	a) Clinical Immunology	2020	✓	✓	✓
		Generic Elective	b) Applied and molecular	2020	✓	✓	✓
		Generic Elective	c) Immuno pharmacology	2020	✓	✓	✓
		OE	a) Research Methodology	2020	✓	✓	✓
		OE	b) Immunological diseases and therapeutics	2020	✓	✓	✓
30	Botany	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2020-2021			✓
		BOT-102	Taxonomy of Angiosperms	2020-2021	✓		✓
		BOT-103	Microbiology	2020-2021	✓		✓
		BOT-104	Human Values and Professional Ethics - I	2020-2021		✓	

BOT-104	Human values and Professional Ethics - I	2020-2021		✓	
BOT-105P	Practical-I	2020-2021	✓	✓	✓
	Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms				
BOT-106P	Practical-II	2020-2021	✓	✓	✓
	Microbiology & Plant Development and Reproduction				
BOT-201	Plant Ecology	2020-2021	✓	✓	✓
BOT-202	Plant Biochemistry and Plant Physiology	2020-2021	✓		✓
BOT-203	Plant Development and Reproduction	2020-2021	✓		✓
BOT-204	Human Values and Professional Ethics - II	2020-2021		✓	
BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2020-2021	✓	✓	✓
	Practical-II				
BOT-206P	Plant Ecology & Cell Biology, Genetics and Evolution	2020-2021	✓	✓	✓
BOT-301	Molecular Biology and Techniques	2020-2021	✓	✓	✓
BOT-302	Biodiversity and Conservation	2020-2021	✓		✓
BOT-303IE	Biosystematics	2020-2021	✓		✓
BOT-304 IE	Molecular Plant Pathology	2020-2021	✓	✓	✓
BOT-306 IE	Computer Applications and Bioinformatics	2020-2021	✓	✓	✓
BOT-307 EE	Plants and Human Welfare	2020-2021	✓	✓	
BOT-308 EE	Organic Farming and Mushroom Cultivation	2020-2021	✓	✓	✓
Bot-309 EE	Gardening and Nursery Techniques	2020-2021	✓	✓	✓
BOT-305P	Practical-I	2020-2021	✓	✓	✓
	Molecular Biology and Techniques; Biodiversity and Conservation				
BOT-306P	Practical – II	2020-2021	✓	✓	✓
	Biosystematics / Molecular Plant Pathology / Computer Applications				
BOT-401	Molecular Genetics, Genomics and Proteomics	2020-2021	✓		

		BOT-402	Plant Biotechnology	2020-2021	✓	✓	✓
		BOT-403IE	Molecular Plant Physiology	2020-2021	✓	✓	✓
		BOT-404IE	Horticulture and Agriculture Biology	2020-2021	✓	✓	✓
		BOT-405IE	Ethnobotany and Phytomedicine	2020-2021	✓	✓	✓
		Practical-I	Molecular Genetics, Genomics and Proteomics & Plant Biotechnology	2020-2021	✓	✓	✓
		Practical -II	Molecular Plant Physiology / Horticulture and Agriculture Biology / Ethnobotany & Phytomedicine	2020-2021	✓	✓	✓
31	Biotechnology	BTH 101	Structure and Functions of Biomolecules	2020	✓		
		BTH 102	Advanced Tools and Techniques	2020	✓		
		BTH 103P		2020	✓		✓
		BTH 104P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2020	✓		✓
		BTH 105	Microbiology and Immunology	2020	✓		
		BTH 106	Human Values and Professional Ethics-I	2020			
		BTH 201	Enzymes and Intermediary Metabolism	2020	✓		
		BTH 202	Molecular Biology	2020	✓		
		BTH 203P	Practicals related to Enzymology & Molecular Biology	2020	✓		✓
		BTH 204P	Practicals related to Biostatistics and Bioinformatics	2020	✓		✓
		BTH 205	Research methodology, Biostatistics and Bioinformatics	2020	✓		
		BTH 206	Human Values and Professional Ethics-II	2020			
		BTH 301	Genetic Engineering	2020	✓		
		BTH 302	Cell and Tissue Culture	2020	✓		
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2020	✓		✓
		BTH 304	a) Bioprocess Engineering and Technology	2020	✓		✓
		BTH 304	b) Legal, Ethical and Implications of Biotechnology	2020	✓		
		BTH 304	c) Food and Industrial Biotechnology	2020	✓		✓
		BTH 305	a) Plant Tissue Culture	2020	✓		
		BTH 305	b) Bioethics	2020	✓		
		BTH 305	c) Bioinformatics	2020	✓		✓
		BTH 401	Environmental Biotechnology	2020	✓	✓	✓

		BTH 402	Plant Biotechnology	2020	✓		
		BTH 403	Project work	2020	✓		✓
		BTH 404	a) Pharmaceutical Biotechnology	2020	✓		
			b) Animal Biotechnology	2020	✓		
			c) Applications of Biotechnology	2020	✓		
			d) Practicals Related to Environmental Biotechnology & Plant Biotechnology	2020	✓		
		BTH 405	a) Tools in Biotechnology	2020	✓		
		BTH 405	b) Immunology	2020	✓		✓
		BTH 405	c) Applications of Biotechnology	2020	✓		
32	Chemistry	CHE-101	Inorganic Chemistry- I	2020			
		CHE-102	Organic Chemistry I	2020			
		CHE-103	Physical Chemistry- I	2020			
		CHE-104	Inorganic Practical- I	2020			
		CHE-105	Organic Practical-I	2020			
		CHE-106	Physical Practical I	2020			
		CHE-107	General Chemistry-I	2020			
		CHE-108	Human Values and Professional Ethics – I	2020			
		CHE-201	Inorganic Chemistry- II	2020			
		CHE-202	Organic Chemistry -II	2020			
		CHE-203	Physical Chemistry- II	2020			
		CHE-204	Inorganic Practical- II	2020			
		CHE-205	Organic Practical-II	2020			
		CHE-206	Physical Practical -II	2020			
		CHE-207	General Chemistry-II	2020			
		CHE-208	Human Values and Professional Ethics – II	2020			
		CHE-AC-301	Inorganic Spectroscopy & Thermal Methods of Analysis	2020	✓	✓	✓
		CHE-AC -302	Organic Spectroscopy	2020	✓	✓	✓
		CHE-AC-303	Classical Methods of Analysis	2020	✓	✓	✓
		CHE-AC-304	Instrumental Methods of Analysis-I	2020	✓	✓	✓
		CHE- 305	(a) Organic Chemistry III	2020			
				2020			
			(b)Physical Chemistry III	2020			
			(c)Green Chemistry	2020			
		CHE- 306	(a) Spectral Techniques	2020	✓	✓	✓
			(b) Chromatographic Techniques	2020	✓	✓	✓

		CHE-AC-401	Quality control and General principles	2020			
		CHE-AC-402	Instrumental Methods of Analysis	2020			
		CHE-AC-403	Instrumental Methods of Analysis-II	2020			
		CHE-AC-404	Project work	2020			✓
		CHE-405	(a) Applied and Environmental aspects	2020			
			(b) Bioinorganic, Bioorganic & Biophysical Chemistry	2020			✓
			(c) Chemistry of Nanomaterials & Functional materials	2020		✓	
		CHE-406	(a) Drug Chemistry	2020	✓	✓	
			(b) Electroanalytical Techniques	2020		✓	✓
33	Environmental Sciences	ENV-101	Ecology and Environment	2020	✓		
		ENV -102	Environmental Chemistry	2020	✓		
		ENV -103	Practical-I	2020	✓	✓	✓
		ENV -104	Practical-II	2020	✓	✓	✓
		ENV -105	Environmental Toxicology and Public Health	2020	✓		
		ENV -106	Human Values and Professional Ethics – I	2020			
		ENV-201	Energy and Environment	2020	✓		✓
		ENV-202	Environmental Pollution	2020	✓		
		ENV-203	Practical-I	2020	✓	✓	✓
		ENV-204	Practical-II	2020	✓	✓	✓
		ENV-205	Instrumental Techniques and applications	2020	✓		✓
		ENV-206	Human Values and Professional Ethics – II	2020			
		ENV-301	Waste Treatment and Management	2020	✓		✓
		ENV-302	Environmental Impact Assessment, Audit and Economics	2020	✓		✓
		ENV-303	Practical-I	2020	✓	✓	✓
		ENV-304	Practical-II	2020	✓	✓	✓
		ENV-305 A	Eco Tourism and Eco- restoration	2020	✓		✓
		ENV-305 B	Biodiversity conservation and Management	2020	✓		✓
		ENV-305 C	Statistics, Computer Applications and Modeling	2020	✓		✓
		ENV-306 A	Natural Resources Conservation	2020	✓		
		ENV-306 B	Environmental Education	2020	✓		
		ENV-401	Water Resources and Watershed Management	2020	✓		✓
		ENV-402	Remote Sensing and GIS	2020	✓	✓	✓
		ENV-403	Practical-I	2020	✓	✓	✓
		ENV-404	Project Work and Comprehensive Viva-Voce	2020	✓	✓	✓
		ENV-405 A	Disaster Mitigation and Management	2020	✓		✓
		ENV-405B	Environmental Laws, Policies and Legislation	2020	✓		
		ENV-405 C	Global Environmental Issues	2020	✓		
		ENV-406 A	Forest Resources and Management	2020	✓		

		ENV-406 B	Environmental Management and Sustainable Development	2020	✓		
34	Fishery Sciences & Aquaculture	AQC 101:	Concepts of Aquatic Ecology	2020-21			
		AQC 102 :	Systematics And External Anatomy of Cultivable Organisms	2020-21			
		AQC 103 A:	Fish Nutrition and Water Quality Management	2020-21			
		AQC: 103 B :	Environmental Monitoring and Bio deterioration	2020-21			
		AQC104 A:	Coastal Aquaculture	2020-21			
		AQC 104 B:	Ornamental Fish Culture	2020-21			
		AQC 105:	Identification and Morphology of Cultivable Organisms	2020-21			
		AQC106 :	Fish Nutrition	2020-21			
		AQC 201:	Principles of Aquaculture	2020-21			
		AQC 202 :	Physiology of Cultivable Organisms	2020-21			
		AQC 203A :	Fresh Water Aquaculture	2020-21			
		AQC 203B:	Capture fisheries	2020-21			
		AQC 204 A:	Fishery Economics, Extension and Environmental Management	2020-21			
		AQC 204 B :	Limnology	2020-21			
		AQC205	Soil and Water Characteristics	2020-21			
		AQC206:	Physiology of Fin Fish and Shell Fish	2020-21			
		AQC 301 :	Microbiology and Fish Pathology	2020-21			
		AQC 302:	Fish Immunology	2020-21			
		AQC: 303A:	Cell Biology and Genetics	2020-21			
		AQC 303 B:	Bioinformatics In Aquaculture	2020-21			
		AQC 304:	Microbiology and Fish Diseases	2020-21			
		AQC 305 :	Fish Nutrition Technology	2020-21		✓	
		a)AQC 306A:	Fish Processing Technology	2020-21		✓	
		b) AQC306B:	Pollution and Toxicology	2020-21			
		AQC 401 :	Aquaculture Biotechnology	2020-21			
		AQC402:	Essentials Of Biochemistry	2020-21			
		AQC403A :	Computer Applications, Information Technology And Biostatistics In Aquaculture	2020-21		✓	
		AQC403B:	Aquaculture Engineering	2020-21			
		AQC 404:	Biotechnology And Biochemical Estimations	2020-21			
		AQC405:	Project Work / Fieldwork	2020-21		✓	
		AQC 406(A):	General Principles and Practices of Aquaculture	2020-21			
		AQC 406 (B):	Fish Breeding and Hatchery Management	2020-21			
35	Geography						

GEG-101	Geomorphology	2020	✓	✓	✓
GEG-102	Economic Resource Studies	2020	✓		✓
GEG-103P	Maps Scales and Map Projections	2020		✓	✓
GEG-104P	Terrain Mapping Techniques	2020		✓	✓
GEG-105	Advanced Cartography	2020		✓	✓
GEG-106	Human Values and Professional Ethics-I	2020			✓
GEG-201	Climatology and Oceanography	2020	✓	✓	✓
GEG-202	Principles of Remote Sensing	2020	✓		✓
GEG-203P	Interpretation of topographical and Weather Maps	2020	✓	✓	✓
GEG-204P	Techniques of Mapping and Map Analysis	2020		✓	✓
GEG-205	Geographical Thought	2020	✓		
GEG-206	Human Values and Professional Ethics-II	2020			
GEG-301	Urban Studies	2020		✓	✓
GEG-302	Geographical Information System(G.I.S)	2020	✓	✓	
GEG-303P	Geographical Information System(G.I.S)	2020	✓	✓	
GEG-304P	Statistical Techniques	2020			
GEG-305A	Agricultural Studies	2020	✓		
GEG-305B	Regional Geography of India with special reference to Andhra Pradesh	2020			
GEG-305C	Disaster Management Studies	2020			
GEG-306A	Regional Geography of Andhra Pradesh	2020			
GEG-306B	Geographical information System(GIS)and Global Positioning System(GPS) applications	2020	✓	✓	✓
GEG-401	Regional Planning	2020			✓
GEG-402	Advanced Remote Sensing	2020			
GEG-403P	Research Techniques	2020			
GEG-404P	Remote Sensing Applications	2020	✓		
GEG-405A	Water and Soil Resource Management	2020			✓
GEG-405B	Environmental Studies	2020			
GEG-405C	Geography for Research Extension and industry	2020			
GEG-406A	Regional Geography of India	2020			
GEG-406B	Remote sensing Principles and Applications	2020			✓
36	Geology				
GEO-101	Geomorphology	2020	✓		
GEO-102	Crystallography & Mineralogy	2020		✓	✓
GEO-103P	Crystallography & Mineralogy	2020		✓	✓
GEO-104P	Geomorphology & Paleontology	2020	✓		
GEO-105	Stratigraphy & Paleontology	2020	✓		
GEO-106	Human Values & Professional Ethics-I	2020			
GEO-201	Structural Geology and Geotectonics	2020			✓
GEO-202	Remote Sensing and GIS	2020			✓

GEO-203P	Structural Geology & Sedimentology	2020		√	
GEO-204P	Remote Sensing and GIS	2020			√
GEO-205	Sedimentology	2020	√		
GEO-206	Human Values & Professional Ethics-II	2020			
		2020			
GEO-301	Igneous Petrology	2020	√	√	√
GEO-302	Metamorphic Petrology	2020	√	√	
GEO-303P	Petrology	2020	√	√	
GEO-304P	Geochemistry	2020	√		
GEO-305	Geochemistry and Thermodynamics	2020			
GEO-306	Computer Applications and Geostatistics	2020			
GEO-307	Dimensional Stones and Building Materials	2020			√
GEO-308	Gemmology	2020			√
GEO-309	Surveying and Field Geology	2020		√	√
GEO-401	Economic Geology	2020	√		√
GEO-402	Mineral Exploration, Mining & Engineering Geology	2020	√		
GEO-403P	Economic Geology	2020	√		
GEO-404P	Project Work	2020	√		
GEO-405	Hydrogeology	2020			√
GEO-406	Environmental Geology & Natural Hazards	2020			
GEO-407	Water Shed Management	2020	√		
GEO-408	Medical Geology	2020	√		
GEO-409	Fuel Geology	2020			
37	Home sciences Food Science Nu				
FSND-101	Food Chemistry and Analysis	2020	√		
FSND -102	Food Science and Experimental Foods	2020			√
FSND -103	Clinical Nutrition and Dietetics-I	2020	√	√	
FSND -104	Food Chemistry and Analysis Practical	2020	√		√
FSND -105	Food Science and Experimental Foods Practical	2020			√
FSND -106	Clinical Nutrition and Dietetics-I Practical	2020	√	√	
FSND -107	Essential of Food and Community Nutrition	2020	√		
FSND -108	Human Values and Professional Ethics-I	2020			√
FSND -201	Nutritional Bio chemistry	2020			√
FSND -202	Food Microbiology and Safety	2020	√		
FSND -203	Clinical Nutrition and Dietetics-II	2020	√	√	
FSND -204	Nutritional Bio chemistry Practical	2020			√
FSND -205	Food Microbiology and Safety Practical	2020	√		√
FSND -206	Clinical Nutrition and Dietetics-II Practical	2020	√	√	
FSND -207	Research Methodology	2020			√
FSND -208	Human Values and Professional Ethics-II	2020			√

FSND -301	Food Processing and Preservation Technology	2020			√
FSND -302	Advanced Human Nutrition	2020			√
FSND -303	Rural Work Experience	2020			√
FSND -304	Internship	2020	√		
FSND -305	(a) Nutrition Research Techniques	2020			√
	(b)Geriatric Nutrition				
	(c)Nutrition in Emergencies and Disaster				
FSND -306	(a) Fundamentals of Food, Nutrition and Health	2020			√
	(b)Nutritional Assessment				
FSND -401	Food Safety Standards and Quality Control	2020	√		
FSND -402	Food Product Development and Marketing	2020	√		
FSND -403	Nutrition for Health and Fitness/Dissertation	2020	√	√	
FSND -404	Food Safety Standards and Product Development Practical	2020	√		√
FSND -405	(a) Institutional Food Service Management	2020	√	√	√
	(b)Baking Technology				
	(c)Food Packaging				
FSND -406	(a) Child Welfare Programmes	2020			√
	(b)Disaster Management				
Human Development and Child	HDCW-101	Advanced Study of Child Development	2020		✓
	HDCW-102	Community Nutrition	2020		✓
	HDCW-103	Trends in Early Childhood Education	2020	✓	✓
	HDCW-104	Developmental Assessment Practical	2020		✓
	HDCW-105	Community Nutrition Practical	2020		✓
	HDCW-106	Early Childhood Education Practical	2020	✓	✓
	HDCW-107	Family Dynamics	2020		
	HDCW-108	Human Values and Professional Ethics - I	2020		
	HDCW-201	Quality Standards in ECE Centers	2020	✓	✓
	HDCW-202	Child Study Techniques	2020		✓
	HDCW-203	Children with Developmental Challenges	2020	✓	✓
	HDCW-204	Participation in ECE Center Practical	2020		✓
	HDCW-205	Child Study Techniques Practical	2020		✓
	HDCW-206	Children with Developmental Challenges Practical	2020	✓	✓
	HDCW-207	Research Methodology	2020		
	HDCW-208	Human values and Professional Ethics-II	2020		
	HDCW-301	Parent Education	2020		✓
	HDCW-302	Theories and Approaches to Child Guidance	2020	✓	✓
	HDCW-303	Rural Work Experience	2020		✓

HDCW-304	Internship	2020	✓		✓
HDCW-305 (A)	Infant Development and Stimulation	2020			✓
HDCW-305 (B)	Family Life Education	2019		✓	
HDCW-305 (C)	Planning For Project Management	2019			
HDCW-306 (A)	(a) Fundamentals of Food, Nutrition and Health	2019			
HDCW-306 (B)	b) Nutritional Assessment	2020			✓
HDCW-401	Guidance and Counseling in Human Development	2020	✓		✓
HDCW-402	Advanced Human Development	2020			✓
HDCW-403	Thesis/Rehabilitation and Management of Children with Special Needs	2020	✓		✓
HDCW-404	Guidance and Counseling Practical	2020	✓		✓
HDCW-405 (A)	Child and Human Rights	2020	✓		
HDCW-405 (B)	Care for Elderly	2020	✓		
HDCW-406 (A)	Child Welfare Programmes	2020	✓	✓	
HDCW-406 (B)	Disaster management	2020			
Extension Management and Cor					
EMCT-101	Extension Education in Community Development	2020	√		
EMCT-102	Community Nutrition	2020			√
EMCT-103	Communication and Media Preparation	2020	√		
EMCT-104	Extension Education in Community Development Practical	2020	√		√
EMCT-105	Community Nutrition Practical	2020			√
EMCT-106	Communication and Media Preparation Practical	2020	√		√
EMCT-107	Dynamics of Rural Society	2020	√		
EMCT-108	Human Values and Professional Ethics-1	2020			√
EMCT-201	Entrepreneurial Development and Empowerment of Women	2020	√	√	√
EMCT-202	Educational Technology	2020	√		√
EMCT-203	Community organization and Leadership	2020	√		√
EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2020	√	√	√
EMCT-205	Educational Technology Practical	2020	√		√
EMCT-206	Community Organization and Leadership Practical	2020	√		√
EMCT-207	Research Methodology	2020	√		√
EMCT-208	Human values and Professional Ethics-II	2020			√
EMCT-301	Rural Development Administration	2020	√		√
EMCT-302	Training and Development	2020	√		√

	EMCT-303	Rural Work Experience	2020			√
	EMCT-304	Internship	2020	√		√
	EMCT-305	(a) Managerial Skills for Extension Professionals	2020	√		√
		(b) Communication Technologies in Extension	2020			
		(c) Sustainable Livelihood Systems	2020			
	EMCT-306	(a) Fundamentals of Food, Nutrition and Health	2020	√	√	√
		(or)	2020			
		(b) Nutritional Assessment	2020			
	EMCT-401	Principles of Guidance and Counseling	2020	√		√
	EMCT-402	Extension Programme Planning and Evaluation	2020	√	√	√
	EMCT-403	Thesis/ Community Health Management	2020	√		
	EMCT-404	Principles of Guidance and Programme Planning Practical	2020	√		
	EMCT-405	(a) Extension Management	2020	√		√
		(b) Science & Technology for Rural Women	2020			
		(c) Environmental Management	2020			
	EMCT-406	(a) Child Welfare Programmes	2020	√		
		or	2020			
		(b) Disaster Management	2020			
Food Technology	FT-101	Food Chemistry and Analysis	2020	√		
	FT-102	Food Science and Experimental Foods	2020	√		
	FT-103	Cereal Grains, Legumes and Oilseed Technology	2020	√		
	FT-104	Food Chemistry and Analysis	2020	√		√
	FT-105	Food Science and Experimental Foods	2020	√		√
	FT-106	Cereal Grains, Legumes and Oilseed Technology	2020	√	√	
	FT-107	Essentials of Food and Community Nutrition	2020			
	FT-108	Human Values and Professional Ethics - I	2020			√
	FT-201	Technology of Horticulture produce	2020	√		
	FT-202	Food Microbiology and Safety	2020	√		√
	FT-203	Dairy Technology	2020	√		
	FT-204	Technology of Horticulture produce	2020	√	√	√
	FT-205	Food Microbiology and Safety	2020	√		√
	FT-206	Dairy Technology	2020	√	√	√
	FT-207	Research Methodology	2020			√
	FT-208	Human Values and Professional Ethics – II	2020			√
	FT-301	Food processing and Preservation Technology	2020	√		√
	FT-302	Live Stock and Sea Food technology	2020	√		√
	FT-303	Food Processing and Preservation Technology	2020	√	√	√

		FT-304	In plant training.	2020	√	√	√
		FT-305(a)	(a)Unit operations in Food Industry.	2020	√		√
			.				
		FT-305(a)	(b) Spices, Condiments and Plantation Crops	2020	√		
		FT-305(a)	(c) Nutrition in Emergencies and Disaster	2020 2020			
		FT-306(a)	(a)Fundamentals of Food, Nutrition and Health	2020	√		
		FT-306(b)	b)Nutritional Assessment	2020			√
		FT-401	Food Safety Standards and Quality Control	2020	√		√
		FT-402	Food Product Development and Marketing	2020	√		√
		FT-403	Nutrition for Health and Fitness/Project Work	2020	√	√	
		FT-404	Food Safety standards and Product Development	2020	√	√	√
		FT-405 (a)	(a) Institutional food service management	2020	√	√	
		FT-405 (b)	(b)Basic Food Engineering	2020	√		√
		FT-405 (c)	(c)Food Packaging	2020	√	√	
		FT-406(a)	(a) Child Welfare Programmes	2020			
		FT-406(b)	(b)Disaster Management	2020			
38	Mathematics	MA 101	Algebra	2020			√
		MA 102	Real analysis	2020			√
		MA 103	Ordinary Differential equations	2020			√
		MA 104	Complex analysis	2020			√
		MA 105	Computer Oriented Numerical Methods	2020	√		√
		MA 106	Human Values & Professional Ethics-I	2020	√	√	√
		MA 201	Galois Theory	2020			√
		MA 202	Partial Differential Equations	2020			√
		MA 203	Topology	2020			√
		MA 204	a) Advanced Complex analysis	2020			√
			b) Semi group theory	2020			
			c) Non linear Analysis	2020			
		MA 205	Human Values & Professional Ethics-II	2020	√	√	√
		MA 206	Measure and Integration	2020			√
		MA 301	Commutative Algebra	2020			√
		MA 302	Functional Analysis	2020			√
		MA 303	Classical Mechanics	2020	√		√
		MA 304	a) Differential Geometry	2020	√	√	√
			b) Cryptography	2020			
			c) Linear Algebra	2020			
		MA 305	a)Discrete Mathematics	2020	√	√	√
			b) Business Mathematics	2020			

		c) Basic Mathematics for Social Sciences	2020			
		MA 401	Number Theory	2020		✓
		MA 402	Banach Algebra	2020		✓
		MA 403	Graph Theory	2020	✓	✓
		MA 404	a) Mathematical Statistics	2020	✓	✓
			b) Approximation Theory	2020		
			c) Algebraic coding Theory	2020		
		MA 405	a) Operation Research	2020	✓	✓
			b) Theoretical Computer Science	2020		
			c) Biomechanics	2020		
	Applied Mathematics	AM 101	Methods of Applied Mathematics	2020		✓
		AM 102	Real analysis	2020		✓
		AM 103	Ordinary Differential equations	2020		✓
		AM 104	Complex analysis	2020		✓
		AM 105	Human Values & Professional Ethics-I	2020	✓	✓
		AM 106	Computer Oriented Numerical Methods	2020	✓	✓
		AM 201	Mathematical Modeling	2020		✓
		AM 202	Partial Differential Equations	2020		✓
		AM 203	Topology	2020		✓
		AM 204	d) Advanced Complex analysis	2020		✓
			e) Semi group theory	2020		
			f) Non linear Analysis	2020		
		AM 205	Human Values & Professional Ethics-II	2020	✓	✓
		AM 206	Measure and Integration	2020		✓
		AM 301	Continuum Mechanics	2020	✓	✓
		AM 302	Functional Analysis	2020		✓
		AM 303	Classical Mechanics	2020	✓	✓
		AM 304	d) Differential Geometry	2020	✓	✓
			e) Cryptography	2020		
			f) Linear Algebra	2020		
		AM 305	a) Discrete Mathematics	2020	✓	✓
			b) Business Mathematics	2020		
			c) Basic Mathematics for Social Sciences	2020		
				2020		
		AM 401	Number Theory	2020		✓
		AM 402	Fluid Dynamics	2020	✓	✓
		AM 403	Graph Theory	2020	✓	✓
		AM 404	d) Mathematical Statistics	2020	✓	✓
			e) Approximation Theory	2020		
			f) Algebraic coding Theory	2020		
		AM 405	a) Operation Research	2020	✓	✓
			b) Theoretical Computer Science	2020		
			c) Biomechanics	2020		

39	Microbiology	MB-101	Biological Chemistry & Analytical Techniques	2020	√	√	√		
		MB-102	Enzymology & Microbial Physiology & Metabolism	2020	√	√	√		
		MB-103P	Practical – I. Biological Chemistry & Enzymology	2020	√	√	√		
		MB-104P	Practical – II. Enzymology & Microbial Physiology & Metabolism	2020			√		
		MB-105	Introductory Microbiology	2020			√		
		MB-106	Human Values and Professional Ethics – I	2020	√		√		
		MB-201	Immunology	2020	√	√	√		
		MB-202	Medical Microbiology	2020	√	√	√		
		MB-203P	Practical – I Immunology	2020	√	√	√		
		MB-204P	Practical – II Medical Microbiology	2020	√	√	√		
		MB-205	Basics of Virology	2020			√		
		MB-206	Human Values and Professional Ethics –II	2020	√		√		
		MB-301	Microbial Genetics and Molecular Biology	2020	√	√	√		
		MB-302	Recombinant DNA Technology & Bioinformatics	2020	√	√	√		
		MB-303	Recombinant DNA Technology & Bioinformatics	2020	√	√	√		
		MB-304	a) Agricultural Microbiology	2020	√	√	√		
			b) Food Microbiology						
		MB-305	a) Agricultural Microbiology	2020	√	√	√		
			b) Food Microbiology						
		MB-306	a) Applied Microbiology	2020	√	√	√		
			b) Industrial Food Microbiology						
		MB-401	Molecular Cell Biology & Technology	2020	√		√		
		MB-402	Environmental Microbiology	2020	√	√	√		
		MB-403	Molecular Cell Biology & Technology & Environmental Microbiology	2020	√		√		
		MB-404	Project	2020			√		
		MB-405	a) Agricultural Biotechnology	2020	√	√	√		
			b) Bioprocess Engineering						
		MB-406	a) Fermentation Technology	2020	√	√	√		
			b) Pharmaceutical Microbiology						
			M.Sc. Industrial Microbiology	IMB-101	Biological Chemistry & Analytical Techniques	2020	√	√	√
				IMB-102	Enzymology & Microbial Physiology & Metabolism	2020	√	√	√
IMB-103P	Practical – I. Biological Chemistry & Enzymology			2020	√	√	√		
IMB-104P	Practical – II. Enzymology & Microbial Physiology & Metabolism			2020			√		
IMB-105	Introductory Microbiology			2020			√		
IMB-106	Human Values and Professional Ethics – I			2020	√		√		
IMB-201	Immunology			2020	√	√	√		
IMB-202	Medical Microbiology			2020	√	√	√		
IMB-203P	Practical – I Immunology			2020	√	√	√		
IMB-204P	Practical – II Medical Microbiology			2020	√	√	√		
IMB-205	Basics of Virology			2020			√		
IMB-206	Human Values and Professional Ethics –II			2020	√		√		

IMB-301	Fundamentals of Industrial Microbiology	2020	√	√	√
IMB-302	Food microbiology and fermentation Technology	2020	√	√	√
IMB-303	Fundamentals of Industrial Microbiology	2020			√
IMB-304	Food microbiology and fermentation Technology	2020	√	√	√
IMB-305	a) Bioprocessing of industrial microorganisms and their Products	2020	√		√
	b) Bioprocess Engineering and Technology				
IMB-306	a) Industrial Biotechnology	2020	√	√	√
	b)Immuno Technology and Human Health				
IMB-401	Downstream Processing Technology	2020	√		√
IMB-402	Cell and Pharmaceutical technology	2020	√	√	√
IMB-403	Downstream processing technology & Cell and Pharmaceutical technology	2020	√		√
IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2020			√
IMB-405	a) Biostatistics & Bioinformatics	2020			√
	b) Biosafety, Bioethics and intellectual property rights				
IMB-406	a) Microbes in Human Welfare	2020	√	√	√
	b) Medical and Diagnostic Microbiology				
40	Physics				
PHY 101	Classical Mechanics and Theory of Relativity	2020			√
PHY 102	Atomic and Molecular Physics	2020			
PHY 103	Solid State Physics	2020			
PHY 104	Analog and Digital Electronics	2020			
PHY 105	General Physics lab. - I	2020			
PHY 106	Electronics lab. - I	2020			√
PHY 201	Statistical Mechanics	2020			
PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2020			√
PHY 203	Mathematical Physics	2020			
PHY 204	Nuclear Physics and Analytical Techniques	2020		√	√
PHY 205	General Physics lab. - II	2020			
PHY 206	Electronics lab. - II	2020			√
PHY 301	Quantum Mechanics – I	2020	√		
PHY 302	Physics of semiconductor devices	2020	√		
PHY 303	A) Applied Spectroscopy-I	2020	√		
	B) Condensed Matter Physics-I	2020			
	C) Electronics-embedded systems	2020	√		
PHY 304	A) Photonics- I	2020	√		
	B) Solar Energy-Thermal Aspects	2020	√		
	C) Vacuum and Thin Film Technology	2020	√		
PHY 305	Specialization-Lab.	2020			
PHY 306	Elective - Lab	2020			
PHY 401	Quantum Mechanics - II	2020			√
PHY 402	Advances in Physics	2020			√
PHY 403	A) Applied Spectroscopy-II	2020			√
	B) Condensed Matter Physics-II	2020			√

		C) Electronics-Wireless Communications	2020			
	PHY 404	A) Photonics - II	2020	✓		
		B) Solar Energy-Photovoltaic Aspects	2020	✓		✓
		C) Properties and Applications of Thin Films	2020			
	PHY 405	Specialization-Lab. – II /	2020			✓
		Project Work	2020			✓
	PHY 406	Elective – Lab. - II /	2020			
		Project Work	2020			
	PSY 103b	Psychological Measurement-I(CF)	2020	√		
	PSY 103c	Positive Psychology (CF)	2020	√		
	PSY 104a	Child Development Psychology	2020	√		√
	PSY 104b	Psychological Measurement & Statistics	2020	√		
	PSY 104c	Forensic Psychology	2020	√		√
	PSY 105	Practicals related to General Psychology –II& Psychopathology-II	2020			√
	PSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2020			
	PSY 203a	Psychopathology-II (CF)	2020	√		
	PSY 203b	Psycho-Diagnosis (CF)	2020	√		√
	PSY 203c	Computer Application in Psychological Research (CF)	2020	√		√
	PSY 204b	Consumer Behavior	2020	√		
	PSY 204c	Industrial & Organizational Psychology	2020	√		
	PSY 205	Practicals related to General Psychology –II& Psychopathology-II	2020			√
	PSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2020			√
	PSY 301	Counseling Psychology (CC)	2020	√		√
	PSY 302	Psychology of Personality (CC)	2020	√		
	PSY 303a	Organizational Behavior & HRM (GE)	2020	√		
	PSY 303b	Therapeutic Approaches in Counseling-I	2020	√		√
	PSY 303c	Health Psychology(GE)	2020	√		
	PSY 304	Core & Generic Elective	2020	√		√
	PSY 305	Stress Management Theory & Practical	2020	√		√
	PSY 306	Personality Development (OE)	2020	√		
	PSY 401	Therapeutic Approaches in Counseling-II(CC)	2020	√		√
	PSY 401c	c. Rehabilitation Psychology (GE)	2020	√		√
	PSY 404	Core & Generic Elective	2020	√		√
	PSY 406	Life Skills (OE)	2020	√		√
	Counselling psychology					

CPSY 103a	Psychopathology-I (CF)	2020	√		
CPSY 103b	Psychological Measurement-I(CF)	2020	√		
CPSY 103c	Positive Psychology (CF)	2020	√		
CPSY 104a	Child Development Psychology	2020	√		√
CPSY 104b	Psychological Measurement & Statistics	2020	√		
CPSY 104c	Forensic Psychology	2020	√		√
CPSY 105	Practicals related to General Psychology –II& Psychopathology-II	2020			√
CPSY 106	Psychological Measurement & Statistics in	2020			
CPSY 203a	Psychopathology-II (CF)	2020	√		
CPSY 203b	Psycho-Diagnosis (CF)	2020	√		√
CPSY 203c	Computer Application in Psychological Research (CF)	2020	√		√
CPSY 204b	Consumer Behavior	2020	√		
CPSY 204c	Industrial & Organizational Psychology	2020	√		
CPSY 205	Practicals related to General Psychology –II& Psychopathology-II	2020			√
CPSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2020			√
CPSY 301	Counselling Process	2020	√		√
CPSY 302	Counselling Skills	2020	√		
CPSY 303a	Therapeutic Approaches in Counseling-I	2020	√		
CPSY 303b	Counseling in Organizational Settings	2020	√		√
CPSY 303c	Health Psychology	2020	√		
CPSY 304	Practicals related to counseling skills & Counseling in Organizational Settings	2020	√		√
CPSY 305	Stress Management & Counseling Psychology	2020	√		√
CPSY 306	Personality Development	2020	√		
CPSY 401	Applications of Counselling in Special Areas	2020	√		√
CPSY 402	Therapeutic Approaches in Counselling-II	2020	√		√
CPSY 403a	Counseling in Hospital Settings	2020	√		√
CPSY 403b	Counseling in Community Settings	2020	√		√
	Family Counseling				
CPSY 403c	Family Counseling	2020	√		√
CPSY 404	Practicals related to counseling techniques & applications in different areas	2020	√		√
CPSY 405	Allotment of Project work (Theory and Practice)	2020			
CPSY 406	Life Skills (OE)	2020			
42	Statistics				
	ST - 305 (a)	Bio-Statistics	2020	√	
	ST - 305 (c)	Total Quality Management and Six- Sigma			√

		ST - 405 (b)	Statistics for Research, industry and Community Development	2020		✓	
		ST - 405 (c)	Advanced Econometric Models	2020	✓		
		ST - 406 (b)	Survival Analysis		✓		
	Applied Statistics	APST – 305 (a)	Advanced Bio-Statistics	2020	✓		
		APST – 305 (c)	Data Mining and Information Security				✓
		APST – 305 (a)	Statistics for Research, industry and Community Development	2020		✓	
		APST – 305 (c)	Actuarial Statistics				✓
43	Virology	VR-101	Biological Chemistry	2020	✓		
		VR-102	Analytical Techniques	2020	✓	✓	✓
		VR-103(P)	Biological Chemistry and Analytical Techniques	2020	✓	✓	✓
		VR-104(P)	General Microbiology and Virology	2020	✓		✓
		VR-105	General Microbiology and Virology	2020	✓		
		VR-106	Human values and Professional ethics - I	2020			
		VR-201	Cell and Molecular Biology	2020	✓		
		VR-202	Recombinant DNA Technology	2020	✓	✓	✓
		VR-203(P)	Cell and Molecular Biology & Recombinant DNA Technology	2020	✓	✓	✓
		VR-204(P)	Immunology	2020	✓	✓	✓
		VR-205	Immunology	2020	✓	✓	✓
		VR-206	Human values and Professional ethics- II	2020			
		VR-301	Plant Virology	2020	✓		
		VR-302	Plant Viruses and Diseases	2020	✓		✓
		VR-303(P)	Plant Virology and Plant Virus Diseases	2020	✓	✓	✓
		VR-304(P)	a) Molecular Virology (OR)	2020	✓	✓	✓
			b) Tumor Virology	2020			
		VR-305	(a) Molecular Virology (OR)	2020	✓	✓	✓
			(b) Tumor Virology	2020			
		VR-306	(a) Veterinary and agricultural Viruses and their management (OR)	2020	✓	✓	
			(b) Emerging and Reemerging Infectious Viral Diseases	2020			
		VR-401	Animal and Human Virology	2020	✓		
		VR-402	Animal and Human Virus Diseases	2020	✓		✓
		VR-403(P)	Animal and Human Virology &	2020	✓	✓	✓
			Virus Diseases	2020			
		VR-404(P)	(a) Applied Virology	2020	✓	✓	✓
			(OR)	2020			
		(b) Virus-based Biotechnology	2020				
	VR-405	(a) Applied Virology	2020	✓	✓	✓	

		(OR)	2020			
		(b) Virus-based Biotechnology	2020			
	VR-406	(a) Human viral diseases	2020	✓	✓	✓
		(OR)	2020			
		(b) Clinical Virology	2020			
44	Zoology	ZOO-101	Invertebrata & Chordata	2020		
		ZOO-102	Genetics & Evolution	2020	✓	✓
		ZOO-103P	Practical-I	2020		✓
			Invertebrata & Chordata and Genetics	2020		
		ZOO-104P	Practical-II	2020	✓	✓
			Metabolic Regulation & Cell Function and Evolution	2020		
		ZOO-105	Metabolic Regulation & Cell Function	2020	✓	✓
		ZOO-106	Human Values and Professional Ethics-I	2020		✓
		ZOO-201	Cell Biology & Immunology	2020	✓	✓
		ZOO-202	Molecular Biology	2020	✓	✓
		ZOO-203P	Practical-I	2020	✓	✓
			Molecular Biology and Cell Biology	2020		
		ZOO-204P	Practical-II	2020	✓	✓
			Comparative Animal Physiology and Immunology	2020		
		ZOO-205	Comparative Animal Physiology	2020	✓	✓
		ZOO-206	Human Values and Professional Ethics-II	2020		✓
		ZOO-301	Developmental Biology	2020	✓	✓
		ZOO-302	Environmental Biology	2020	✓	✓
		ZOO-303P	Developmental Biology and Tools & Techniques	2020	✓	✓
		ZOO-304P	Environmental Biology and Enzymology	2020	✓	✓
		ZOO-305A	Tools & Techniques	2020	✓	✓
		ZOO-305B	Enzymology	2020	✓	✓
		ZOO-305C	Environmental Microbiology	2020	✓	✓
		ZOO-306A	Economic Zoology	2020	✓	✓
		ZOO-306B	Structural Biology	2020	✓	✓
		ZOO-306C	Human Health and Infectious diseases	2020	✓	✓
		ZOO-401	Neurobiology	2020	✓	✓
		ZOO-402	Toxicology	2020	✓	✓
		ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2020	✓	✓
		ZOO-404P	Toxicology and Animal Behavior & Wild life	2020	✓	✓
		ZOO-405A	Animal Biotechnology & Microbiology	2020	✓	✓
		ZOO-405B	Animal Behavior & Wild life	2020	✓	✓
		ZOO-405C	Endocrinology	2020	✓	✓
		ZOO-406A	Genetic Engineering	2020	✓	✓

		ZOO-406B	Environmental Impact Assessment & Green Auditing	2020	✓		✓
		ZOO-406C	Medical biotechnology, IPR, Biosafety methods	2020	✓		✓
	Animal Biotechnology	ABT- Core- 101	Metabolic Regulation & Cell Function (MRCF)	2020	✓		
		ABT- Core- 102	Tools & Techniques (TT)	2020			✓
		ABT-Core-P-103	MRCF	2020	✓		✓
		ABT-Core-P-104	TT	2020	✓		✓
		ABT-CF-105	Microbiology and Diseases	2020	✓		✓
		ABT -EF- 106	Human Values & Professional Ethics (HVPE)-I	2020			✓
		ABT- Core- 201	Molecular Biology (MB)	2020	✓		✓
		ABT- Core- 202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2020	✓		✓
		ABT-Core-P-203	MB & IM	2020	✓		✓
		ABT-Core-P-204	ACC-SCB & CB	2020	✓		✓
		ABT- CF-205	Cell Biology & Immunology (CB&IM)	2020	✓		
		ABT- EF- 206	Human Values & Professional Ethics (HVPE)-II	2020			✓
		ABT- Core- 301	Enzymology (ENZ)	2020	✓		✓
		ABT- Core- 302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2020	✓	✓	✓
		ABT-Core-P-303	ENZ & GE	2020	✓		✓
		ABT-Core-P-304	ARBTT & EBT	2020	✓		✓
		GE-305A	Cancer Biology	2020	✓		✓
		GE-305B	Animal Biotechnology & Industrial Applications	2020	✓		✓
		GE-305C	Biostatistics & Bioinformatics	2020	✓		✓
		OE-306A	Environmental Biotechnology (EBT)	2020	✓		✓
		OE-306B	Genetic Engineering (GE)	2020	✓		✓
		ABT- Core- 401	Medical Biotechnology (MBT)	2020	✓		✓
		ABT- Core- 402	Fermentation Technology and Down streaming Process (FTDSP)	2020	✓		✓
		ABT-Core-P-403&404	Project and Viva- Voce	2020	✓	✓	✓
		GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2020	✓		✓
		GE-405B	Drug design and Development	2020	✓		✓
		GE-405C	Animal Cell Culture Techniques	2020	✓		✓
		OE-406A	Advanced Genomics and Proteomics	2020	✓		✓
		OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2020	✓		✓

45	Business Management							
		MBA-101	Management and Organizational Behaviour	2020			✓	
		MBA-102	Managerial Communication	2020	✓	✓	✓	
		MBA-104	Accounting for managers	2020	✓			
		MBA-108	Human Values and Professional Ethics-I	2020	✓	✓	✓	
		MBA-201	Marketing Management	2020			✓	
		MBA-204	Production Management	2020			✓	
		MBA-208	Leadership values and Styles	2020		✓	✓	
		MBA-302	Entrepreneurship	2020		✓		
		MBA-303	Industrial Project Course	2020	✓	✓		
		MBA-401	Digital Business Models	2020	✓			
		MBA-402	Strategic Management	2020			✓	
		MBA-404	Organisation Development	2020			✓	
		46	Computer Science					
MCA 101	Discrete Mathematical Structures			2020-21	✓			
MCA 102	Object Oriented Programming with Java			2020-21	✓			
MCA 103	Computer Organization			2020-21	✓			
MCA 104	Operating Systems			2020-21	✓			
MCA 105	105A.Accounting and Financial management			2020-21		✓		
	105B.Accounting Essentials for Computer Applications			2020-21		✓		
MCA 106P	Software Lab I (based on 101 & 103)			2020-21	✓			
MCA 107 P	Object Oriented Programming Lab			2020-21	✓			
MCA 108P	Operating Systems Lab			2020	✓			
MCA 201	Computer Oriented Operations Research			2020	✓			
MCA 202	Data Structures using Java			2020	✓			
MCA 203	Data Communication and Computer Networks			2020	✓			
MCA 204	Advanced Database Management Systems			2020	✓			
MCA 205A	205A. E-Commerce			2020	✓			
MCA 205B.	Cyber Security			2020	✓			
MCA 205C	Neural Networks			2020	✓			
MCA 206	Group Discussion			2020	✓			
MCA 207P	Software Lab II			2020	✓			
	(Based on 201 & 203)			2020	✓			
MCA 208P	Data Structures Lab			2020	✓			
MCA 209P	Advanced Database Management Systems Lab			2020	✓			
M.Sc Computer Science	MSCS -101C			Computer	2020	✓		
				Organization	2020			

M.Sc Computer Science	MSCS -102C	Programming in Java & Data Structures	2020	✓		
			2020			
M.Sc Computer Science	MSCS -103C	Operating Systems	2020	✓		
			2020			
M.Sc Computer Science	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2020	✓		
M.Sc Computer Science	MSCS – 104 GE - B	Computer Oriented Operational Research	2020	✓		
M.Sc Computer Science	MSCS - 05CF	Environmental Studies	2020		✓	
M.Sc Computer Science	MSCS - 106EF	A. PC Hardware Basics	2020		✓	
M.Sc Computer Science	MSCS - 106EF	B. Statistical Methods	2020		✓	
M.Sc Computer Science	MSCS - 107P1		2020	✓		✓
M.Sc Computer Science	MSCS - 108P2		2020	✓		✓
M.Sc Computer Science	MSCS -201C	Advanced Data Base Management System	2020	✓		
			2020			
M.Sc Computer Science	MSCS -202C	Computer Networks	2020	✓		
M.Sc Computer Science	MSCS -203C	Computer Graphics	2020	✓		
M.Sc Computer Science	MSCS- 204 GE – A	E- Commerce	2020	✓	✓	
M.Sc Computer Science	MSCS- 204 GE B	Accounting And Financial Management	2020	✓		
M.Sc Computer Science	MSCS- 205CF	Human Rights And Value Education	2020	✓		
M.Sc Computer Science	MSCS- 206 EF A	Principles Of Management	2020	✓	✓	
			2020			
M.Sc Computer Science	MSCS- 206 EF B	Internet Of Things	2020	✓		
M.Sc Computer Science	MSCS- 207P1		2020	✓		✓
M.Sc Computer Science	MSCS- 208P2		2020	✓		✓
M.Sc Computer Science	MSCS-301C	Data Warehousing And Data Mining	2020	✓		
			2020			
M.Sc Computer Science	MSCS-302C	Web Technologies	2020	✓		
M.Sc Computer Science	MSCS-303C	Software Engineering	2020	✓	✓	
M.Sc Computer Science	MSCS -304- GE-A	Systems Programming	2020	✓		
M.Sc Computer Science	MSCS -304- GE-B	Computer Algorithms	2020	✓		
M.Sc Computer Science	MSCS -304- GE-C	UID Using .Net Technologies	2020	✓		
M.Sc Computer Science	MSCS -304- GE-D	IT in Forensic Science	2020	✓		
M.Sc Computer Science	MSCS -304- GE-E	Software Testing	2020	✓		
M.Sc Computer Science	MSCS -305 GE-A	Cloud Computing	2020	✓		
M.Sc Computer Science	MSCS -305 GE-B	Big Data Analytics	2020	✓		
M.Sc Computer Science	MSCS -305 GE-C	Artificial Neural Networks	2020	✓		

M.Sc Computer Science	MSCS -305	Cyber Security	2020	✓		
	GE-D		2020			
M.Sc Computer Science	MSCS -305	Mobile App Development	2020	✓		
	GE-E		2020			
M.Sc Computer Science	MSCS - 306OE	The courses offered by other departments	2020	✓		
		1. Programming in C	2020			
		2. Office Automation	2020			
		3. Internet	2020			
		Fundamentals and Web Designing	2020			
M.Sc Computer Science	MSCS - 307P1		2020	✓		✓
M.Sc Computer Science	MSCS - 308P2		2020	✓		✓
M.Sc Computer Science	MSCS – 401	Major Project Work	2020	✓		✓
Commerce M.com(R)						
	101	Accounting Standards & Reporting	2020	✓		
	102	Financial Management	2020	✓		✓
	103	Business Environment and Policy	2020		✓	✓
	104	Organisational Behaviour	2020	✓		✓
	105a	Quantitative Techniques for Business Decisions	2020			✓
	106	Human Values & Professional Ethics - II	2020		✓	✓
	201	Advanced cost Accounting	2020	✓		
	202	Financial Markets and Services	2020	✓		✓
	203	Strategic Financial Management	2020	✓		✓
	204	Corporate Governance	2020	✓	✓	
	205a	Working Capital Management	2020	✓	✓	
	206a	e-Banking Operations	2020			✓
	301	Security Analysis and Portfolio Management	2020	✓		✓
	302	Accounting for Managerial Decisions	2020	✓		✓
	303a.	Tally with GST Application	2020	✓		✓
	304c.	Entrepreneurship & MSMEs	2020	✓		✓
	304a	Security Ananlysis & Portfolio Management	2020	✓		✓
	305a	Fundamentals of Accounting	2020			✓
	401	Financial Derivatives	2020			✓
	402	Tax Planning & Managemnt	2020	✓		✓
	403a.	E-Commerce	2020	✓		✓
	404b.	Personality Development & Soft Skills	2020	✓		✓
	405a	Security Market Operations	2020	✓		✓
M.com(A&F)	101	Accounting Standards & Reporting	2020	✓		

	102	Financial Management	2020	√		√
	103	Business Environment and Policy	2020		√	√
	104	Organisational Behaviour	2020	√		√
	105a	Quantitative Techniques for Business Decisions	2020			√
	106	Human Values & Professional Ethics - I	2020		√	√
	201	Advanced cost Accounting	2020	√		
	202	Financial Markets and Services	2020	√		√
	203	Strategic Financial Management	2020	√		√
	204	Corporate Governance	2020	√	√	
	205a	Working Capital Management	2020	√	√	
	206a	e-Banking Operations	2020			√
	301	Security Analysis and Portfolio Management	2020	√		√
	302	Accounting for Managerial Decisions	2020	√		√
	303a.	Tally with GST Application	2020	√		√
	303c.	Tax planning & Management	2020	√		√
	304a	Accounting for Managerial Decisions	2020	√		√
	305a	Fundamentals of Accounting	2020			√
	401	Financial Derivatives	2020			√
	402	Project Planning & Control	2020	√		√
	403a.	Insurance Management	2020	√		√
	403b.	Personality Development & Soft Skills	2020	√		√
	405a	Security Market Operations	2020	√		√
M.com(FM)	101	Accounting Standards & Reporting	2020	√		
	102	Financial Management	2020	√		√
	103	Business Environment and Policy	2020		√	√
	104	Organisational Behaviour	2020	√		√
	105a	Quantitative Techniques for Business Decisions	2020			√
	106	Human Values & Professional Ethics - I	2020		√	√
	201	Advanced cost Accounting	2020	√		
	202	Financial Markets and Services	2020	√		√
	203	Strategic Financial Management	2020	√		√
	204	Corporate Governance	2020	√	√	
	205a	Working Capital Management	2020	√	√	
	206a	e-Banking Operations	2020			√
	301	Security Analysis and Portfolio Management	2020	√		√
	302	Accounting for Managerial Decisions	2020	√		√

		303a.	Tally with GST Application	2020	√		√
		303c.	Tax planning & Management	2020	√		√
		304a	International Financial Management	2020	√		√
		305a	Fundamentals of Accounting	2020			√
		401	Financial Derivatives	2020			√
		402	Project Planning & Control	2020	√		√
		403a.	Insurance Management	2020	√		√
		404d.	Mergers & Acquisitions	2020	√		√
		405a	Security Market Operations	2020	√		√
48	B.Pharmacy						
		BPH 101A	Mathematics (For Bi.P.C. Stream)	2020	√		
		BPH 101B	Biology (For M.P.C. Stream)	2020	√		
		BPH 101C	Biology Practicals (For M.P.C. Stream)	2020	√	√	√
		BPH 102	English & Soft Skills	2020	√		√
		BPH 103	Pharmaceutical. Inorganic Chemistry	2020	√	√	
		BPH 104	Pharmaceutical Organic Chemistry-I	2020	√	√	
		BPH 105	Human Anatomy and Physiology	2020	√		
		BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2020	√	√	√
		BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2020	√	√	√
		BPH 108	Human Anatomy and Physiology Practicals	2020	√	√	√
		BPH 109	General & Dispensing Pharmacy	2020	√		
		BPH 110	Pharmaceutical Organic Chemistry-II	2020	√		
		BPH 111	Computer applications	2020	√		√
		BPH 112	Pharmacognosy I	2020	√		
		BPH 113	Human Anatomy and Physiology and Pathophysiology	2020	√		
		BPH 114	General & Dispensing Pharmacy Practicals	2020	√	√	√
		BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2020	√	√	√
		BPH 116	Computer applications Practicals	2020	√	√	√
		BPH 117	Pharmacognosy I	2020	√	√	√
			Practicals	2020			
		BPH 201	Physical pharmacy –I (Theory)	2020	√		
		BPH 202	Pharmaceutical Engineering (Theory)	2020	√		
		BPH 203	Pharmaceutical organic chemistry III (Theory)	2020	√		
		BPH 204	Pharmaceutical Biochemistry (Theory)	2020	√		
		BPH 205	Environmental studies (Theory)	2020	√		
		BPH 206	Physical pharmacy –I (Practical)	2020	√	√	√
		BPH 207	Pharmaceutical Engineering (Practical)	2020	√	√	√

BPH 208	Pharmaceutical organic chemistry III (Practical)	2020	✓	✓	✓
BPH 209	Pharmaceutical Biochemistry (Practical)	2020	✓	✓	✓
BPH 210	Physical Pharmacy II (Theory)	2020	✓		
BPH 211	Pharmaceutical Analysis I (Theory)	2020	✓		
BPH 212	Pharmaceutical Technology I (Theory)	2020	✓		
BPH 213	Pharmacognosy II (Theory)	2020	✓		
BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2020	✓		
BPH 215	Pharmaceutical pharmacy II (Practical)	2020	✓	✓	✓
BPH 216	Pharmaceutical Analysis I (Practical)	2020	✓	✓	✓
BPH 217	Pharmaceutical technology I (Practical)	2020	✓	✓	✓
BPH 218	Pharmacognosy II (Practical)	2020	✓	✓	✓
BPH 301	Pharmaceutical Technology-II	2020	✓		
BPH 302	Medicinal chemistry – I	2020	✓		
BPH 303	Pharmacology – I	2020	✓		
BPH 304	Pharmaceutical microbiology	2020	✓		
BPH 305	Drug store and Industrial Management and Marketing	2020	✓		
BPH 306	Pharmaceutical Technology-II	2020	✓		
BPH 307	Medicinal chemistry-I practicals	2020	✓	✓	✓
BPH 308	Pharmaceutical Microbiology practicals	2020	✓	✓	✓
BPH 309	Medicinal chemistry-II (theory)	2020	✓		
BPH310	Pharmacology II– Theory	2020	✓		
BPH311	Pharmaceutical. Analysis II(Theory)	2020	✓		
BPH312A	Forensic Pharmacy– Theory	2020	✓		
BPH312B	Clinical Trials– Theory	2020	✓		
BPH312 C	Industrial.Pharmacy & Cosmetic Technology– Theory	2020	✓		
BPH313	Medicinal Chemistry-II Practicals	2020	✓	✓	✓
BPH314	Pharmacology-II Practicals	2020	✓	✓	✓
BPH315	Pharmaceutical. Analysis II Practicals	2020	✓	✓	✓
BPH 401	Medicinal Chemistry-III	2020	✓		
BPH 402	Pharmacology-III	2020	✓		
BPH 403:	Pharmacognosy-III	2020	✓		
BPH 404:	Biopharmaceutics & Pharmacokinetics	2020	✓		
BPH 405A:	Chemistry Of Natural Products	2020	✓		
BPH 405B:	Hospital & Community Pharmacy	2020	✓		
BPH 405C	Pharmacovigilance	2020	✓	✓	
BPH 406	Medicinal Chemistry-III Practicals	2020	✓	✓	✓
BPH 407	Pharmacology-III Practicals	2020	✓	✓	✓
BPH 408	Pharmacognosy-III Practicals	2020	✓	✓	✓

		BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2020	✓	✓	✓
		BPH 410:	Novel Drug Delivery Systems	2020	✓		
		BPH 411	Pharmaceutical Biotechnology (Theory)	2020	✓		
		BPH 412:	Clinical Pharmacy & Therapeutics	2020	✓		
		BPH 414	Project Work & Seminar	2020	✓	✓	✓
	M.Pharmacy	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2020	✓		
		MPH 103	Practical 1	2020	✓	✓	✓
		MPH 104	Practical-II(MAT)	2020	✓	✓	✓
		MPH 105	Modern Analytical Techniques and biostatistics Theory	2020	✓		
		MPH 106	Human Values and Professional Ethics-I	2020	✓		
		MPH 107	Comprehensive Viva	2020	✓	✓	✓
		MPH 201A (Pharmacology)	Molecular Pharmacology	2020	✓		
		MPH 202 A	Methods in Drug Evaluation	2020	✓		
		MPH 203	Practical 1	2020	✓	✓	✓
		MPH 204	Practical-II(BPK)	2020	✓	✓	✓
		MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2020	✓		
		MPH 206	Human Values and Professional Ethics-II	2020	✓		
		MPH 207	Comprehensive Viva	2020	✓	✓	✓
		MPH 301	Mid-Term Evaluation of Research project	2020	✓	✓	✓
		MPH 401	Project thesis submission & presentation and Project Viva voce	2020	✓	✓	✓

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	
1	Adult & Continuing Education Rural Development and Management	MARDM 1.1	Introduction To Rural Development	2021	√			
		MARDM 1.2	Equity And Social Development In Rural Area	2021		√	√	
		MARDM1.3	Indian Rural Economic Structure	2021	√			
		MARDM1.4	Literacy And Education For Rural Development	2021	√			√
		MARDM1.5a	Rural Development Institutions	2021	√			
		MARDM1.5b	Information And Communication Technology For Rural Development	2021	√			√
		MARDM1.5c	Rural Governance And Rural Development	2021	√			
		MARDM1.6a	Economics Of Agriculture	2021	√			√
		MARDM1.6b	Rural Development Theories And Approaches	2021				
		MARDM2.1	Rural Industrialisation	2021	√	√		
		MARDM2.2	Research Methods And Methodology In Rural Development	2021				√
		MARDM2.3	Agriculture & Rural Bio -Technology	2021	√	√		
		MARDM2.4	Field Visits And Field Report	2021	√			√
		MARDM2.5a	Rural Marketing And Management	2021			√	
		MARDM2.5b	Rural Development Programmes And Planning	2021	√	√		
		MARDM2.5c	Horticulture And Rural Development	2021	√	√		
		MARDM2.6a	Population Growth And Development In Rural Area	2021				
		MARDM2.6b	Economic Growth And Rural Development	2021	√			
		MARDM3.1	Natural Resources Sustainable Development - Land	2021	√			√
		MARDM3.2	Natural Resources Management -Water	2021	√			√
		MARDM3.3a	Natural Resources Management-Vegetation	2021	√	√		√
		MARDM3.3b	Communications For Rural Development	2021				√
		MARDM3.3c	Women & Child Development And Rural Development	2021	√			
		MARDM3.3d	Rural Project Planning And Management	2021	√			
		MARDM3.4	Soft Skill Development	2021				√
		MARDM3.5a	Career Guidance And Counselling	2021	√			√
		MARDM3.5b	Extension Activities And Voluntarism-Rural Development	2021				√
		MARDM4.1	Agriculture And Rural Development	2021	√			√
		MARDM4.2	Rural Banking And Credit	2021	√	√		

		MARDM4.3a	Environment And Development	2021	√			
		MARDM4.3b	Statistical Methods For Social Research	2021	√		√	
		MARDM4.3c	Rural Entrepreneurship And Development	2021		√		
		MARDM4.3d	Vocational Education And Training	2021	√		√	
		MARDM4.4	Project Report/Dissertation	2021	√		√	
		MARDM4.5a	Human Resources Development In Rural Sectors	2021	√	√	√	
		MARDM4.5b	Skill Development Initiatives	2021	√		√	
2	AIHC & Archacology							
		AIHC&A-101		2021				
		AIHC&A-105	Ancient World Civilizations.	2021				
			(A) Principles and Methods of Archaeology.	2021	√			
		AIHC&A-105		2021				
		AIHC&A-106	(B) Advanced Archacological Theory and Research Methodology	2021	√			
		AIHC&A-204	Pre and Proto Historic Cultures of India	2021	√			
		AIHC&A-205 (A)	(A) History of Indian Archaeology	2021	√		√	
		AIHC&A-301	History of Indian Architecture	2021				
		AIHC&A-302	Epigraphy	2021			√	
		AIHC&A-303(B)	(B) Historiography and Historical Method	2021	√			
		AIHC&A-303(C)	(C) Laboratory Methods in Scientific Archaeology	2021	√		√	
		AIHC&A-303(D)	(D) Temple Studies	2021				
		AIHC&A -304	Soft Skills in Archaeology	2021	√		√	
		AIHC&A-305(A)	(A) Outlines of Indian History	2021				
		AIHC&A-305(B)	(B) Women in Indian History	2021				
		AIHC&A-401	History of Indian Art	2021				
		AIHC&A-402	Numismatics	2021	√		√	
		AIHC&A-403(A)	(A) Museology	2021				
		AIHC&A-403(B)	(B) Historical Applications in Tourism	2021	√			
		AIHC&A-403(C)	(C) Tour Guiding and Management	2021	√	√		
		AIHC&A-403(D)	(D) Conservation of Cultural Property	2021				
		AIHC&A-404	History of Science and Technology in Ancient India	2021	√			
		AIHC&A-405(A)	(A) Introduction to Indian Archaeology	2021				
		AIHC&A-405(B)	(B)History of Vijayanagara Empire	2021				
3	Area Studies Programme							
		SE 101	Early Cultural History of Southeast Asia	2021				
		SE 102	Regional Geography of Southeast Asia	2021	√			
		SE 105 c	Indian National Movements	2021	√			

		SE 106 a	Medieval Indian History 1206 A.D.–1707 A.D	2021				
		SE 106 b	History of Asian and African Nationalism	2021				
		SE 201	Contemporary Cultural History of Southeast Asia	2021	√			
		SE 202	Modern History of China, 1839-1976	2021				
		SE 203	Regional Geography of South Pacific & East Asia	2021	√			
		SE 204	Nationalism in Southeast Asia	2021				
		SE 205 c	International Organisations	2021	√			
		SE 206 a	History of the USA from 1789 to 1990	2021				
		SE 206 b	International Relations	2021	√			
		SE 304	Skills and Approaches in Understanding Area Studies	2021			√	
		SE 305 b	Emerging Asia and the World	2021	√			
		SE 403a	Post-Cold War World order	2021				
		SE 403b	Ethnicity and Social Transformation in Contemporary Southeast Asia and Australia	2021	√			
		SE 403c	Developing Blue Economy	2021	√		√	
		SE 403 d	Energy, Environment and Sustainable Development	2021				
		SE 404	Viva + Dissertation	2021				
		SE 405 a	India-Australia Relations	2021	√			
		SE 405 b	India and Asia-Pacific	2021	√			
6	Centre for Women's Studies	101	Introduction to Gender and Women's Studies	2021-22			√	
		102	Principles of Management with Gender Lens	2021-22	√	√	√	
		103	Gender, Patriarchy and Society	2021-22	√		√	
		104	Women's Movements: National and International Perspectives	2021-22			√	
		105(a)	Environment: Gender and Livelihood Challenges	2021-22	√	√	√	
		105(b)	Social Process and Behavioral Issues: Gender Questions	2021-22	√	√	√	
		105(c)	Education: Gender Achievements and Gaps	2021-22	√	√	√	
		106(a)	Gender Sensitization and Training: Needs and Strategies	2021-22	√	√	√	
		106(b)	Communication, Soft Skills and Etiquette	2021-22	√	√	√	
		201	Development – Gender Perspectives	2021-22	√		√	
		202	Health and Nutrition: Gender Analysis	2021-22	√		√	
		203	NGO Management and Social Development	2021-22	√	√	√	
		204	Policies and Programmes for Women's Development	2021-22			√	

205(a)	Media and Governance: Gender Concerns	2021-22	√		√	
205(b)	Gender Identity and Leadership: Needs and Strategies	2021-22	√	√	√	
205(c)	Gender Based Violence: Issues and Concerns	2021-22	√	√	√	
206 (a)	Human Rights with Gender Lens	2021-22			√	
206(b)	Financial Literacy and Management	2021-22	√	√	√	
301	Feminist Theories	2021-22			√	
302	Research Methods and Statistics: Feminist Concerns	2021-22	√	√	√	
303(a)	Capacity Building and Leadership: Gender Questions	2021-22	√	√	√	
303(b)	Guidance and Counseling with Gender Perspectives	2021-22	√	√	√	
303(c)	Human Resource Management : Gender Analysis	2021-22	√	√	√	
303(d)	Women, Science and Technology: Gender Biases and Strategies	2021-22			√	
304	Computer Applications and Software Packages for Data Analysis	2021-22	√	√	√	
305(a)	Social Values and Ethics : Gender Concerns	2021-22	√		√	
305(b)	Governance: Gender Issues and Challenges.	2021-22	√		√	
401	Entrepreneurship Development: Gender Analysis	2021-22	√	√	√	
402	Women's Legislations – Gender Concerns	2021-22	√		√	
403(a)	Participatory Learning, Methods and Extension Education	2021-22	√		√	
403(b)	Social Structure: Gender Biases and Questions	2021-22	√		√	
403(c)	Women's Health: A Life Cycle Approach	2021-22	√		√	
403(d)	Globalization: Gender Implications	2021-22			√	
404	Project Work	2021-22	√	√	√	
405(a)	Media and Communication: Gender Concerns	2021-22	√	√	√	
405(b)	Women and Work: Gender Questions	2021-22	√		√	
7	Econometrics					
	EMT-105(a)	Statistical Methods	2021-22	√	√	
	EMT-106 (a)	Entrepreneurship and Skill Development	2021-22	√		
	EMT-205(a)	Mathematical Economics	2021-22	√		
	EMT-205 (c)	Women and Economic Development	2021-22	√		
	EMT-206(b)	Industrial Economics	2021-22	√	√	
	EMT- 302	Computer Applications and Data Analysis	2021-22			√
	EMT- 303(b)	Applied Econometrics	2021-22	√		
	EMT-304	Personality Development	2021-22			√

		EMT-303(d)	Financial Institutions and Markets	2021-22	√			
		EMT- 402	Optimization Techniques in Economics	2021-22	√			
		EMT- 405(b)	Data Base for the Indian Economy	2021-22	√			
8	Economics							
		101	Micro-Economic Analysis – I	2021-22				
		102	Macro-Economic Analysis - I	2021-22				
		103	Public Economics	2021-22				
		104	Mathematical Methods in Economics	2021-22	√			
		106(a)	Economics of Environment	2021-22	√			
		106(b)	Demography	2021-22	√			
		204	Statistical Methods in Economics	2021-22	√		√	
		205(a)	International Trade: Theory and Policy	2021-22	√			
		205(b)	Economics of Infrastructure	2021-22				
		205(c)	Introduction to Information Technology	2021-22	√		√	
		206(a)	Basic Econometrics	2021-22	√			
		206(b)	Economics of Tourism	2021-22	√			
		303 (a)	International Finance	2021-22	√			
		303 (b)	Production Economics and Farm Management	2021-22	√			
		303 (c)	Industrial Economics	2021-22				
		303 (d)	Women and Economic Development	2021-22				
		304	Communication and Soft Skills	2021-22	√		√	
		305 (a)	Andhra Pradesh Economy	2021-22				
		305 (b)	Agricultural Economics	2021-22	√		√	
		401	Rural Development	2021-22				
		402	Financial Institutions and Markets	2021-22	√			
		403 (a)	India's Economic Reforms	2021-22				
		403 (b)	Entrepreneurship and Skill Development	2021-22	√	√	√	
		403 (c)	Labour Economics	2021-22				
		403 (d)	Economics of Insurance	2021-22	√			
		404	Human Resource and Sustainable Development	2021-22	√			
		405 (a)	Human Resource Development	2021-22	√			
		405 (b)	Planning in India and Indian Economy	2021-22				
9	Education							
		101	Perspectives of Educational Psychology	2021	✓		✓	
		102	Educational Studies	2021	✓		✓	
		103	Fundamentals of Educational Research	2021	✓	✓	✓	
		104	Teacher Education	2021	✓	✓	✓	
		105	Foundations of Educational Philosophy	2021	✓		✓	
		106	Measurement and Evaluation	2021	✓	✓	✓	

		201	Educational Planning and Management	2021	✓		✓	
		202	Advanced Educational Research	2021	✓	✓	✓	
		203	Guidance and Counseling	2021	✓	✓	✓	
		204	Issues and Research in Teacher Education	2021	✓	✓	✓	
		205	Foundations of Educational Sociology	2021	✓	✓	✓	
		206	Secondary Education	2021	✓		✓	
		301	Information and Communication Technology in Education	2021	✓	✓	✓	
		302	Comparative Education	2021	✓		✓	
		303	Inclusive Education	2021	✓	✓	✓	
		304-C	Environmental Education	2021	✓		✓	
		304-D	Life Skills Education	2021	✓	✓	✓	
		305-A	Teaching Strategies for Teachers	2021	✓	✓	✓	
		401	Advanced Educational Technology	2021	✓		✓	
		402	Psychology – Learner and Life	2021	✓	✓	✓	
		403	Environmental Concerns in Secondary Education	2021	✓		✓	
		404-A	Human Values and Professional Ethics	2021	✓	✓	✓	
		404-B	Lifelong Education	2021	✓		✓	
		405-A	Personality Development and Soft Skills	2021	✓	✓	✓	
10	English	ENG 101	Poetry-I (From Chaucer to Browning)	2021				
		ENG 105A	English Language and Linguistics	2021	✓			
		ENG 106B	Technical Communication	2021	✓		✓	
		ENG 107	Human Values and Professional Ethics	2021				
		ENG 204	Literary Masterpieces	2021				
		ENG 205A	English Language Teaching	2021	✓		✓	
		ENG 205B	New Literatures in English (excluding Indian Literature in English)	2021				
		ENG 301	Indian Writings in English -I	2021				
		ENG 302	Literary Criticism	2021	✓			
		ENG 303D	Comparative Literature	2021	✓			
		ENG 304	Communication, Soft Skills & Etiquette	2021	✓		✓	
		ENG 305A	Communicative English	2021			✓	
		ENG 305B	English for Media	2021	✓		✓	
		ENG 404	India & Literary Creativity	2021				
		ENG 405A	Soft Skills	2021	✓		✓	
		ENG 405B	Indian Literature in English Translation	2021	✓		✓	
11	Languages and Linguistics	101	Phonetics	2021	✓			
		102	Phonology	2021	✓			
		103	Morphology	2021	✓			

		104	Syntax	2021	✓		
		105A	Language and Linguistics	2021	✓		✓
		105B	Semantics	2021			
		105 C	Structure of Language(Telugu/English)	2021			✓
		106 A	Human Values and Professional Ethics	2021			
		106 B	Relations	2021			
			Instructional Technology	2021			✓
		5b	Dictionary Making	2021			
12	HINDI	HIN-101	Sahitya ka Itihas	2021	✓		
		HIN-102	Pracheen evam Madhaykaleen Kavya	2021			
		HIN-106 B	Patrakarita aur Jansanchar madhayam	2021	✓		
		HIN-203	Nataya Sahitya	2021			✓
		HIN-204	Aalochana Sahitya	2021	✓		
		HIN-205 A	Gadhya Sahitya	2021			
		HIN-205 B	Anya Gadhya Sahitya	2021			
		HIN-205 C	Andhra ka Hindi Sahitya	2021			
		HIN-206 A	Prayojanmulak Hindi aur Rajbhasha	2021	✓		
		HIN-206 B	Anuvad ke Sidhanta aur Prayog	2021	✓		✓
		HIN-303 D	Pravasi Sahitya	2021	✓		
		HIN-304	Bhasha Shikshan ke Sidhanta	2021			✓
			aur Prayog	2021	✓		
		HIN-305 A	Vyavharik Hindi Vyakaran	2021	✓		
		HIN-305 B	Hindi Sahitya ke Nirmata	2021			
		HIN-401	Bhartiya Tulnatmak Sahitya	2021	✓		
		HIN-402	Paschatya Samiksha Shastra	2021			
		HIN-403 A	Anudit Bhartiya Sahitya	2021	✓		
		HIN-403 B	Asmitamulak Sahitya Vimarsha	2021			
		HIN-403 C	Sahitya ka Tulnatmak Adhayayan	2021			
		HIN-403 D	Anusandhan ke Sidhanta aur Dristiya	2021	✓		✓
		HIN-404	Antar Jananushasnatmak Dristiya aur prfavidhiya	2021			
		HIN-405 A	Manak Hindi aur Nagrilipi	2021	✓		✓
		HIN-405 B	Aadhunik Hindi Sahitya ke Nirmata	2021			
13	History	HST 101	History of India Up to 650 A D				
		HST 102	History of Indian Polity and Economy, 1206-1757	2021	✓		
		HST 103	History of Modern India, 1757 – 1947	2021			
		HST 104	History of Modern World, 1900-1945	2021			
		HST 105 (A)	History of Andhras upto 1336 A D	2021			
		HST 105 (B)	History of World Civilizations	2021	✓		

	HST 106 (A)	Theoretical Concepts of Tourism	2021	✓			
	HST 106 (B)	History of Medieval World	2021				
	HST 201	History of India 650-1206 A D	2021				
	HST 202	Social and Cultural History of India, 1206-1757	2021	✓			
	HST 203	Freedom Movement in India, 1857 –1947	2021				
	HST 204	History of Contemporary World, 1945-2000	2021				
	HST 205 A	History of Vijayanagara Empire	2021				
	HST 205 B	History of Modern Africa	2021				
	HST 206 A	Historical Application of Tourism in India	2021	✓		✓	
	HST 205 A	Women Studies in Modern India	2021				
	HST 207	Human Values and Professional Ethics-II	2021				
	HST 301	Historical Method and Concepts	2021	✓			
	HST 302	Contemporary History of India-I	2021				
	HST 303 (A)	History of USA, 1776- 1963	2021				
	HST 303(B)	History of Modern Andhra, 1766 –1972	2021				
	HST 303 (C)	Indian Foreign Policy: An Introduction	2021	✓			
	HST 303 (D)	Environmental History of Modern India	2021				
	HST 304	Communication and Soft Skills	2021	✓		✓	
	HST 305 (A)	Economic and Cultural History of India, 1757-1857	2021				
	HST 305(B)	Intellectual History of 19 th Century India	2021				
	HST 401	Historiography	2021				
	HST 402	Contemporary History of India-II	2021	✓			
	HST 403(A)	International Relations and Organizations	2021				
	HST 403(B)	Constitutional History of India, 1773-1950	2021	✓			
	HST 403(C)	History of Modern Asia 1868-1960	2021				
	HST 403 (D)	History of Modern Latin America	2021				
	HST 404	History of Science and Technology in India 1858-1947	2021	✓			
	HST 405 (A)	Outlines of Andhra History and Culture	2021				
	HST 405 (B)	Health, Medicine and Society in Modern India	2021	✓			
14	HUMAN RIGHTS AND SOCIAL DEVEL						
	HR 101	Human Rights: Concepts and Theoretical Perspectives					
	HR 102	Human Rights in India the constitutional and Legal Framework	2021	✓			
	HR 103	Human Rights and Duties Education	2021				
	HR 104	Rights and the implementation Machinery	2021	✓		✓	
	HR 105A	Working Class and Human Rights and Duties	2021	✓			

		HR 105B	Human Rights Education, Teaching and Training	2021	✓		✓	
		HR 106 A	Human Rights Activism and Role of NGOs	2021	✓		✓	
		HR 106 B	Social Movements and Human Rights in India	2021				
		HR 107	Human Values and Professional Ethics - I	2021				
		HR 201	Human Rights and Indian Polity	2021	✓			
		HR 202	Emerging Dimensions of Human Rights	2021	✓			
		HR 203	Human Rights: The International Context	2021	✓			
		HR 204	Research Methodology, Statics and Computer Applications	2021	✓		✓	
		HR 205 A	Human Rights – The Socio Economic Context	2021	✓			
		HR 205 B	Societal Problems of Human Rights in India	2021	✓			
		HR 206A	Human Rights and Criminal Justice System	2021	✓			
		HR 206A	Media and Human Rights	2021	✓		✓	
		B	Human Values and Professional Ethics - II	2021				
		HR 301	Social Movements and Human Rights and Duties	2021	✓			
		HR 302	Science, Technology, Human Rights and Duties	2021	✓		✓	
		HR 303A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2021				
		HR 304 B	Soft Skills	2021	✓		✓	
		HR 305A	Historical and Philosophical Perspectives of Human Rights	2021				
		HR 306C	Human Rights and Duties in India	2021	✓			
		HR 401 A	Human Rights in Andhra Pradesh	2021	✓			
		HR 402B	Development, Trade and Human Rights	2021	✓			
		HR 403 C	International, Humanitarian and Refugee Laws	2021	✓			
		HR 405E	Development, Globalization and Human Rights	2021	✓			
15	Law	LAW-101	Mass Media Law	2021	✓	✓	✓	
		LAW-102	Public Utilities Law	2021		✓	✓	
		LAW103	Law and Social Transformation in India	2021	✓	✓	✓	
		LAW-104	Indian Constitutional Law, The New Challenges.	2021	✓	✓	✓	
		LAW-201	Union State Finance Relations	2021	✓	✓	✓	
		LAW-202	Constitutionalism, Pluralism and Federalism	2021	✓	✓	✓	
		LAW-203	Judicial Process	2021	✓	✓	✓	
		LAW-204	Legal Education and Research Methodology	2021	✓	✓	✓	
		LAW-301	Human Rights	2021	✓	✓	✓	

		LAW-302	National Security, Public Order and Rule of Law	2021	✓	✓	✓	
		LAW-303	Practical Training	2021	✓	✓	✓	
		LAW-304 a	Environment Protection and the Law	2021	✓	✓	✓	
		LAW-304b	Intellectual Property Rights Law	2021	✓	✓	✓	
		LAW-305 a	Cyber Crimes and Law	2021	✓	✓	✓	
		LAW305 b	Evolution and Concept of ADR	2021	✓	✓	✓	
		LAW401	Dissertation and Viva- Voce	2021	✓	✓	✓	
		LAW-402 a	Law and Consumer Protection	2021	✓	✓	✓	
		LAW -402 b	International Human Rights (MOOC/Online)	2021	✓	✓	✓	
16	Library and Information Science	101	Foundations of Library and Information Science	2021			✓	
		102	Knowledge Organization : Classification Theory	2021	✓		✓	
		103	Knowledge Organization : Classification Practice	2021	✓		✓	
		104	Knowledge Management	2021		✓	✓	
		105 (A)	Introduction to Information Technology	2021	✓		✓	
		106 (A)	Human Values and Professional Ethics - I	2021				
		201	Information Sources and Services	2021				
		202	Knowledge Organization : Cataloguing Theory	2021	✓		✓	
		203	Knowledge Organization : Cataloguing Practice	2021	✓		✓	
		204	Meta Data Standards – Practice	2021	✓		✓	
		205 (A)	Introduction to Information Technology	2021			✓	
		206	Human Values and Professional Ethics-II	2021				
		301	Information Processing and Retrieval Theory	2021	✓		✓	
		302	Library Automation and Digital Library	2021	✓		✓	
		303	Search and search strategies	2021				
		304 (A)	User Studies	2021				
		304 (B)	Internship	2021	✓		✓	
		304(C)	Academic Library System	2021				
		304(D)	Special Library System	2021	✓		✓	
		305(A)	Information Literacy	2021			✓	
		305(B)	Information and Communication	2021			✓	
		401	Research Methodology	2021	✓		✓	
		402	Software for Libraries - Practice	2021				
		403	Dissertation / Project work	2021				
		404 (A)	Management of Information system	2021	✓		✓	
		404 (B)	Museums and Archives	2021				
		404(C)	Information Processing and Retrieval : UDC and Indexing Practice	2021	✓		✓	

		404(D)	Marketing of Information Products and Services	2021				
		405(A)	Information Systems and Programmes	2021				
		405(B)	Technical Writing	2021	✓		✓	
17	Mass Communication & Journalism							
18	Performing Arts	1	Theory of Music (T)	2021	✓		✓	
		2	SuddhaMadhyama Raga-s (P)	2021	✓		✓	
		3	ShadavaAudava Ragas (P)	2021	✓		✓	
		4	PancaratraKrti-s of Tyagaraja (P)	2021			✓	
		5a	AbhyasaGana -1	2021			✓	
		5b	Abhyasa Gana-2	2021			✓	
		5c	Abhyasa Gana-3	2021			✓	
		6a	Bhajans-1	2021	✓		✓	
		6b	Applied Theory	2021	✓		✓	
			Human Values &Professional Ethics-1	2021				
		1	History of Music (T)	2021			✓	
		2	PrathiMadhyama Raga-s (P)	2021	✓		✓	
		3	Bhashanga Ragas (P)	2021	✓		✓	
		4	Rare raga-s(P)	2021	✓		✓	
		5a	AbhyasaGana -4	2021			✓	
		5b	Abhyasa Gana-5	2021			✓	
		5c	Abhyasa Gana-6	2021			✓	
		6a	Geyanataka (P)	2021			✓	
		6b	Swarajati of Syamasasstry (P)	2021			✓	
			Human Values and Professional Ethics-2	2021				
		1	VilambakalaKritis (P)	2021	✓		✓	
		2	Group Kritis (P)	2021	✓		✓	
		3a	Vakra raga-s(P)	2021			✓	
		3b	Manodharma Sangeetham (P)	2021	✓		✓	
		3c	Study of LakshanaGrantha-S (T)	2021	✓		✓	
		3d	Post Trinity Compositions	2021			✓	
		4	Communication and Soft skills	2021	✓		✓	
		5a	Devotional Songs -1	2021			✓	
		5b	Patriotic / Folk songs	2021			✓	
		1	Advanced Theory (T)	2021	✓		✓	
		2	Concert (P)	2021	✓		✓	
		3a	RagamTanamPallavi (P)	2021			✓	
		3b	Dance Repertoire	2021	✓		✓	
		3c	Post trinity composers- 20 th century and beyond (P) (P)	2021			✓	

		3d	Ragamalika	2021	✓		✓	
		4	Project Work (T)	2021			✓	
		5a	Devotional Songs -2	2021			✓	
		5b	Annamayya Songs	2021			✓	
19	Philosophy	101	Classical Indian Philosophy	2021	✓		✓	
		202	Ethics- Indian	2021	✓			
		203	Ethics –Western	2021	✓			
		204	Modern Western Philosophy	2021				
		205-A	Philosophy of Education	2021				
		205-B	Philosophy of Kant	2021				
		205-C	Nyaya Sutras	2021	✓		✓	
		301	Social and Political Philosophy	2021	✓		✓	
		302	Philosophy of Vedanta	2021				
		303-A	Philosophical Approach to Gandhi	2021				
		403-B	Analytical Philosophy	2021	✓			
		403-C	Sri Vaishnavism	2021				
		403-D	Research Methodology and Computer Applications	2021				
20	Physical Education	CC-101	History, Principles and foundations of Physical Education	2021				
		CC-102	Anatomy and Physiology	2021				
		CC-103	Educational Technology and Methods of Teaching in Physical Education	2021		✓	✓	
		EC-111	Communication & Soft skills	2021				
		EC-112	Olympic Movement	2021			✓	
		PC-121	Track and Field (Running Events), *Gymnastics/*Swimming (* Any one)	2021			✓	
		PC-122	Football, Tennis, Throwball	2021		✓	✓	
		PC-123	Badminton, Kho-Kho, Shooting	2021		✓	✓	
		PC-124	Mass Demonstration Activities:	2021				
			Flag Hoisting, March past,					
			Calisthenics, Lezium					
			Dumb-bells, Kolatam, Aerobics					
			Wands, Hoops, Pole Drill, Folk Songs & Patriotic Songs					
		CC-201	Kinesiology and Biomechanics	2021		✓	✓	
		CC-202	Health Education and Environmental Studies	2021			✓	
		CC-203	Measurement and Evaluation in Physical Education	2021			✓	
		EC-211	Computer Applications in Physical Education	2021				
		EC-212	Recreation and Leisure Management	2021				

		PC-221	Track and Field (Jumping Events) * Gymnastics/*Swimming (* Any one)	2021						
		PC-222	Yoga, Ball Badminton, Kabaddi	2021					✓	
		PC-223	Hockey, Handball, Cricket	2021					✓	
		TP-231	Teaching Practice (Class room and Outdoor) (4 internal and 1 External in class room and outdoor)	2021					✓	
21	Political Science & Public Administration	PSPA 101	Constitution Making - Indian Experience	2021	✓	✓	✓			
		PSPA 105 (b)	Indian Political Thought	2021	✓	✓				
		PSPA 103	Modern Political Analysis	2021	✓	✓	✓			
		PSPA105 (c)	Public Relations& Mass Communication	2021	✓	✓	✓			
		PSPA106 (a)	Dynamics of Public Administration	2021	✓	✓	✓			
		PSPA106 (b)	Globalization and Indian Political Economy	2021	✓	✓	✓			
		PSPA 201	Administrative Theories	2021		✓	✓			
		PSPA 202	Research Methodology	2021	✓	✓	✓			
		PSPA 203	Indian Government and Politics	2021	✓	✓	✓			
		PSPA 204	Public Policy	2021	✓	✓	✓			
		PSPA205 (a)	Indian National Movement	2021	✓	✓	✓			
		PSPA205 (b)	Public Enterprises in India	2021	✓	✓	✓			
		PSPA 205 (c)	Administrative Techniques	2021	✓	✓	✓			
		PSPA 206 (b)	International Administration	2021	✓		✓			
		PS303(a)	Good Governance and Information Technology	2021	✓	✓	✓			
		PS 304	Personality Development and Employment	2021	✓	✓	✓			
		PS305(a)	Social Movements in India	2021	✓					
		PA 301	Public Personnel Administration	2021	✓		✓			
		PA303(b)	Issues in Indian Administration	2021	✓		✓			
		PA303(d)	Political Dynamics	2021		✓	✓			
		PA 305(b)	Indian Polity and Governance	2021	✓	✓	✓			
		PS 401	India's Foreign Policy-Continuity,	2021	✓		✓			
		PS 402	Center-State Relations in India	2021	✓		✓			
		PS 403(b)	E-Governance	2021	✓	✓	✓			
		PS 405(b)	Women and Politics	2021	✓	✓	✓			
		PA 401	Human Resource Management	2021	✓	✓	✓			
		PA 402	Financial Administration	2021	✓	✓	✓			
		PA 403(c)	Disaster Management	2021	✓	✓	✓			
		PA 403(d)	Office Management	2021	✓	✓	✓			
		PA 405(a)	Indian Constitution	2021	✓					

		PA 405(b)	Banking Management	2021	✓	✓	✓	
22	Population Studies	PSC 101	Population Characteristics and Theories	2021	✓		✓	
		PSC 102	Fertility	2021	✓		✓	
		PSC 103	Mortality	2021	✓		✓	
		PSC 104	A Sources, Evaluation and Adjustment of Data	2021	✓	✓	✓	
		PSC 105	B Population Education and Extension	2021	✓		✓	
			C Public Health, Nutrition and Health Education	2021				
			DHealth Planning and Policy	2021				
		PSC 106	A Population and Development Planning	2021				
			B P opulation and Environment	2021				
		PSC 107	Human Values and Professional Ethics - 1	2021				
		PSC 201	Migration and Multi Regional Demography	2021			✓	
		PSC 202	N.G.O Management	2021	✓	✓	✓	
		PSC 203	Statistical Methods	2021	✓	✓	✓	
		PSC 204	Population Sociology	2021	✓		✓	
		PSC 205	Population and Sustainable Development	2021	✓		✓	
			Population Economics	2021				
			Disaster Management	2021				
		PSC 206	Community Health	2021	✓		✓	
			Demographic Data Management	2021				
		PSC 207	Human Values and Professional Ethics – II	2021				
		PSC 301	Population Geography	2021	✓		✓	
		PSC 302	Research Methodology	2021	✓		✓	
		PSC 303	Population Psychology	2021	✓		✓	
			Population Policies and Programmes	2021	✓		✓	
			Gerontology	2021				
			Population Ecology, Urbanization and Migration	2021				
		PSC 304	Soft and Employability Skills	2021				
		PSC 305	Principles of Population Studies	2021	✓			
			Population, Society and Environment	2021	✓		✓	
		PSC 401	Communication for Family Welfare Programmes	2021	✓		✓	
		PSC 402	Reproductive Health and Adolescent Issues	2021	✓		✓	
		PSC 403	Population Growth and Development	2021	✓			
			Health Economics	2021	✓			
			Demography of Andhra Pradesh	2021	✓			
			Demographic Techniques	2021	✓		✓	
		PSC 404	Dissertation/ Project Work	2021				
		PSC 405	A Rural, Urban, Tribal Development	2021				

		B Social policies and planning	2021	✓		✓	
MASTER OF SOCIAL WORK	MSW-101	Sociology for Social Work	2021	✓			
	MSW-102	Human growth and Personality Development	2021	✓		✓	
	MSW-103	Social Work Profession & Field Work Orientation-I	2021	✓	✓		
	MSW 104	Social Work practice with Individuals and Groups	2021	✓		✓	
	MSW 105A	Social Work Practicum-I	2021			✓	
	MSW 105B	Issues and Concerns in Occupational Social Work	2021				
	MSW 105 C	Social Work in Industry and Human Resource Management	2021				
	MSW 106	Social Work in Industry and Human Resource Management	2021				
	MSW 107	Human Values and Professional Ethics - I	2021				
	MSW 201	Social Work Profession and Field Work Orientation-II	2021	✓	✓	✓	
	MSW 202	Social Work Practice with Communities	2021	✓	✓	✓	
	MSW 203	Social Action and Social Legislation for Social Work Practice	2021	✓		✓	
	MSW 204	Social work Research	2021				
	MSW 205 A	Social Work Practicum-II	2021			✓	
	MSW 205 B	Social Work Practice with Differently Abled	2021			✓	
	MSW 205 C	Social Work and Disaster Management	2021	✓		✓	
	MSW 206 A	Counseling in Social Work Practice	2021	✓	✓	✓	
	MSW 206 B	Social Welfare Project Formulation and Management	2021				
	MSW 207	Human Values and Professional Ethics - II	2021				
	MSW 301	Social Work Intervention With Families	2021	✓		✓	
	MSW 302	Social Work in the Field of Health	2021	✓		✓	
	MSW 303 A	Counseling in Social Work Practice	2021				
	MSW 303 B	Social Work Practicum-III	2021			✓	
	MSW 303 C	Social Work and Disaster Management	2021			✓	
	MSW 303 D	Gerontological Social Work	2021	✓	✓	✓	
	MSW 304	Soft and Employability Skills	2021		✓	✓	
	MSW 305 A	Counseling in Social Work Practice	2021	✓	✓	✓	
	MSW 305 B	Human Rights and Social Legislation	2021	✓	✓	✓	
	MSW 401	Social Work Intervention With Children	2021	✓		✓	
	MSW 402	Rural, Urban, Tribal Development and Empowerment	2021	✓		✓	
	MSW 403 A	Social Work in the Field of Mental Health	2021	✓		✓	
	MSW 403 B	Social Work Practicum-IV and Block Field work	2021	✓	✓	✓	

		MSW 403 C	Environment and Social Work	2021			✓	
		MSW 403D	Diversity and Inclusiveness	2021	✓	✓		
		MSW 404	Social Work Project	2021				
		MSW 405 A	NGO Management	2021	✓	✓	✓	
		MSW 405 B	Health Education	2021	✓		✓	
23	Sanskrit	SNSKT 101	Elements of Darsanas-I	2021				
		SNSKT 102	Vedic Texts-I	2021	✓			
		SNSKT 106(B)	Kavyalankara sutra vritti-I	2021				
		SANSKT 107	Human values and Professional Ethics -I	2021				
		SNSKT 201	Elements of Darsanas-II	2021	✓			
		SNSKT 202	Vedic Texts-II	2021	✓			
		SNSKT 203	Prose And Poetry –II	2021				
		SNSKT 204	Drama, Alankara and Prosody-II	2021				
		SNSKT 301	(Sahitya)-Rasagangadhara-I	2021	✓		✓	
		SNSKT 302	(Sahitya)-Dhvanyaloka-I	2021				
		SANSKT 304	Personality Development in Pancatantra(Mitrabheda and Mitrapraktikam only)	2021	✓		✓	
		SANSKT 305(A)	Introduction of Sanskrit Language infant reader complete	2021				
		SANSKT 305(B)	Raghuvamsam (Ist canto only)	2021				
		SNSKT 401	(Sahitya)-Rasagangadhara-II	2021	✓			
		SNSKT 402	(Sahitya)-Dhvanyaloka-II	2021				
24	Sociology	MASO-102	Sociological Research methods	2021	✓		✓	
		MASO-104	Participatory Research	2021	✓		✓	
		MASO-201	Applied Sociology	2021	✓			
		MASO-203	Rural Sociology and Development	2021	✓			
		MASO-204	Extension Work	2021	✓		✓	
		MASO-205	Environmental Sociology	2021	✓	✓		
		MASO 206	Media Education and Society	2021	✓	✓		
		MASO-301	Medical Sociology	2021	✓	✓	✓	
		MASO-303	Field Work and Extention Work (Village Placement)	2021	✓	✓		
		MASO-304-A	Human Rights	2021	✓	✓		
		MASO-304-C	Gerontology	2021	✓	✓	✓	
		MASO-305-A	Social Psychology and Personality Development	2021	✓	✓	✓	
		MASO-401	Criminology	2021	✓	✓	✓	
		MASO-402	Industrial Dynamics	2021	✓	✓		
		MASO-403	Field Work	2021	✓	✓		

		MASO-404-A	Social Welfare and Welfare Administration	2021	✓	✓		
		MASO-405 D	Globalisation and Educational Pursuits	2021	✓	✓		
		MASO-405 A	Social Entrepreneurship Innovation and Startups	2021	✓	✓	✓	
25	Tamil	TML 101	Modern Literature	2021	✓			
		TML 104	Principle of Literary Criticism - I	2021	✓			
		TML 106 B	Journalism	2021	✓		✓	
		TML 201	Modern Literature - II	2021	✓			
		TML 205 B	Feminism	2021	✓			
		TML 303	General Linguistics	2021	✓		✓	
		TML 303 A	Comparative study of South Indian Literature - I	2021	✓			
		TML 304D	Folk Arts in Tamil	2021	✓		✓	
		TML 403	Comparative grammar of Dravidian Languages and History of Tamil Language	2021	✓			
		TML 404D	Folk Festivals	2021	✓		✓	
26	Telugu Studies	101	Prescribed Texts Classical Poetry & Drama					
		102	General Linguistics	2021	✓			
		105	Folk Literature	2021	✓		✓	
		204	Telugu Grammar and Poetics	2021	✓			
		303	Telugu Journalism	2021	✓		✓	
		304	Personality Development and Language Skills	2021	✓		✓	
		401	Modern Telugu Literary Criticism	2021	✓			
		403 A	Methods of Translation	2021	✓		✓	
		404 D	Comparative Literature	2021	✓			
		405 A	Fundamentals of Folk Lore	2021	✓		✓	
27	Urdu	URD 206(B) :	Arooz Aur Balaghath	2021	✓		✓	
		URD 303(C):	Bunyadi Computer Course : URDU DTP	2021	✓	✓	✓	
		URD 304 :	Zara E Iblagh Sahafath Aur	2021	✓		✓	
		URD 305(B) :	Urdu Tarjuma Nigari	2021	✓		✓	
SVU COLLEGE OF SCIENCES								
28	Anthropology	ANO : 101	Introduction to Biological Anthropology	2021	✓		✓	
		ANO : 102	Introduction to Social Cultural Anthropology	2021	✓		✓	
		ANO-103	Introduction to Archaeological Anthropology	2021	✓		✓	
		ANO-104	Indian Anthropology		✓		✓	
		ANO-105	Social Problems and Anthropology		✓		✓	
		ANO 106	Economic and Political Anthropology	2021	✓		✓	

ANO 107	Human Ecology	2021	✓		✓	
ANO 108	Tribal Development in India	2021	✓		✓	
ANO-109P	Somatometry & Somatoscopy	2021	✓		✓	
ANO 110P	Archaeological Anthropology	2021	✓		✓	
ANO 111	Human Values and Professional Ethics -I	2021	✓		✓	
ANO 201	Comparative Ethnography and Indian Anthropology	2021	✓		✓	
ANO 202	Principals of Genetics	2021	✓		✓	
ANO203	Prehistoric India	2021	✓		✓	
ANO204	Urban Anthropology	2021	✓		✓	
ANO205	Fieldwork Traditions	2021	✓		✓	
ANO 206	Research Methods in Anthropology	2021	✓		✓	
ANO 207	Biology, Health and Disease	2021	✓	✓	✓	
ANO 208	Early Civilizations	2021	✓		✓	
ANO209P	Doing Ethnography	2021	✓		✓	
ANO 210P	Craniology and Craniometry	2021	✓		✓	
ANO 211	Human Values and Professional Ethics -II	2021	✓		✓	
ANB 301	Human Evolution and Fossil Evidence	2021	✓		✓	
ANB 302	Human Genetics	2021	✓		✓	
ANB 303	Anthropological Demography	2021	✓		✓	
ANB 304	Forensic Anthropology	2021	✓	✓	✓	
ANB 305	Epidemiology and Public Health	2021	✓	✓	✓	
ANB 306 P	Dermatoglyphics and Human Osteometry	2021	✓		✓	
ANB 307	Biostatistics and Computer Applications	2021	✓	✓	✓	
ANB 308	Palaeoanthropology	2021	✓		✓	
ANB 309	Fundamentals of Anthropology	2021	✓		✓	
ANB 401	Biological Anthropology	2021	✓		✓	
ANB-402	Human Population Genetics	2021	✓		✓	
ANB -403	Human Growth, Physique and Nutrition	2021	✓		✓	
ANB -404	Applied Biological Anthropology	2021	✓		✓	
ANB -405	Medical Genetics		✓	✓	✓	
ANB-406P	Advanced Biological Anthropology	2021	✓		✓	
ANB 407	Fieldwork, Dissertation & Viva-Voce	2021	✓		✓	
ANB-408	Epidemiology	2021	✓	✓	✓	
ANB -409	Applied Biological Anthropology	2021	✓		✓	
ANS 301	Theories of Culture	2021	✓		✓	
ANS 302	Social Anthropology of Complex Societies	2021	✓		✓	
ANS 303	Ecological Anthropology	2021	✓		✓	
ANS 304	Applied Anthropology- Indigenous Communities	2021	✓		✓	
ANS 305	Anthropology of Religion Sacred complexes in India	2021	✓		✓	

		ANS 306P	Participatory of Research methods in Development Process	2021	✓		✓	
		ANS307	Data Management and Computer Applications	2021	✓	✓	✓	
		ANS 308	Anthropology and Career Promotion	2021	✓		✓	
		ANS 309	Tribal Studies	2021	✓		✓	
		ANS 401	Structural Anthropology	2021	✓		✓	
		ANS -402	Developmental Anthropology	2021	✓		✓	
		ANS-403	Medical Anthropology	2021	✓	✓	✓	
		ANS 404	Culture and Management	2021	✓		✓	
		ANS 405	Anthropology of Displaced Populations	2021	✓		✓	
		ANS 406p	Non-Governmental and Extension Studies	2021	✓		✓	
		ANS 407	Fieldwork, Dissertation & Viva-Voce	2021	✓		✓	
		ANS-408	Visual Anthropology	2021	✓		✓	
		ANS -409	Environmental Anthropology	2021	✓		✓	
29	Biochemistry	101	Biochemical and Biophysical Methods	2021	✓	✓	✓	
		102	Molecular Physiology and Nutrition	2021	✓	✓		
		103P	Biochemical Preparations & Analysis	2021	✓	✓	✓	
		104P	Biochemical & Biophysical Methods Practicals	2021	✓	✓	✓	
		105	Enzymology	2021	✓	✓	✓	
		106a/b	Cell Biology and Biomolecules/ Environmental Biochemistry	2021	✓	✓	✓	
		201	Energy Metabolism	2021		✓		
		202	Nitrogen Metabolism	2021		✓		
		203P	Enzymology Practicals	2021	✓	✓	✓	
		204P	Microbiology Practicals	2021	✓	✓	✓	
		205	Molecular Biology	2021	✓	✓	✓	
		206a/b	Microbial Biochemistry/Genetics	2021	✓	✓	✓	
		301	Immunology	2021	✓			
		302	Ecology and Evolution	2021	✓	✓	✓	
		303P	Clinical Biochemistry Practicals	2021	✓	✓	✓	
		304P	Molecular Biology Practicals	2021	✓	✓	✓	
		305(SOC)	Clinical Biochemistry (Skill oriented course)	2021	✓	✓	✓	
		306GE	Endocrinology	2021	✓	✓		
		306GE	Plant Biochemistry	2021	✓	✓		
		307OE	a) Analytical methods	2021	✓	✓	✓	
		307OE	b) Environmental Biochemistry	2021	✓	✓	✓	
		401	Genetic Engineering	2021	✓	✓	✓	
		402	Research Methodology & Bioinformatics	2021	✓	✓	✓	
		403P	Immunology & Haematology Practicals	2021	✓	✓	✓	
		404	Project work	2021	✓	✓	✓	

		405GE	Developmental Biology	2021		✓		
		405GE	Applied Biochemistry	2021	✓	✓	✓	
		406OE	a) Research Methodology	2021	✓	✓	✓	
		406OE	b) Nutritional Biochemistry	2021	✓	✓	✓	
	Immunotechnology	101	Biochemical and Biophysical methods	2021	✓	✓	✓	
		102	Physiology and Nutrition	2021	✓	✓		
		103P	Biochemical Preparations & Analysis Practicals	2021	✓	✓	✓	
		104P	Biochemical & Biophysical Methods Practicals	2021	✓	✓	✓	
		105	Enzymology	2021	✓	✓	✓	
		106	Cell Biology and Bio molecules	2021		✓		
		201	Energy Metabolism	2021		✓		
		202	Nitrogen Metabolism	2021		✓		
		203P	Enzymology Practicals	2021	✓	✓	✓	
		204P	Microbiology practicals	2021	✓	✓	✓	
		205	Molecular Biology	2021	✓	✓	✓	
		206	Microbial Biochemistry & Genetics	2021	✓	✓	✓	
		301	Immunology	2021	✓			
		302	Ecology and Evolution	2021	✓	✓	✓	
		303P	Clinical Immunology Practicals	2021	✓	✓	✓	
		304P	Molecular Biology Practicals	2021	✓	✓	✓	
		305(SOC)	Clinical Immunology (Skill Oriented course)	2021	✓	✓	✓	
		306GE	a) Molecular Endocrinology	2021	✓	✓		
		306 GE	b) Developmental Biology	2021		✓		
		307 Open Elective	a) Basics of Immunology	2021	✓			
		307 Open Elective	b) Immunotechniques	2021	✓	✓	✓	
		401	Genetic Engineering	2021	✓	✓	✓	
		402	Research Methodology & Bioinformatics	2021	✓	✓	✓	
		403P	Hematology Practicals	2021	✓	✓	✓	
		404P	Project work	2021	✓	✓	✓	
		405 GE	a) Applied & Molecular Immunology	2021	✓	✓	✓	
		405 GE	b) Immuno pharmacology	2021	✓	✓	✓	
		406 Open Elective	a) Research Methodology	2021	✓	✓	✓	
		406 Open Elective	b) Immunological disease & therapeutics	2021	✓	✓	✓	
30	Botany							
		BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2021-2022			+	

		BOT-102	Taxonomy of Angiosperms	2021-2022	✓		✓	
		BOT-103	Microbiology	2021-2022	✓		+	
		BOT-104	Plant Development and Reproduction	2021-2022	✓		✓	
		BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2021-2022	✓	+	✓	
		BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2021-2022	✓		✓	
		BOT-107	Audit Course Human Values and Professional Ethics-I	2021-2022			✓	
		BOT-201	Plant Biochemistry and Metabolism	2021-2022	✓			
		BOT-202	Phytobiodiversity and Conservation	2021-2022	✓		✓	
		BOT-203	Plant Ecology	2021-2022	✓		✓	
		BOT-204	Cell Biology, Genetics and Evolution	2021-2022	✓		✓	
		BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2021-2022	✓		✓	
		BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2021-2022	✓		✓	
		BOT-207	Audit Course Human Values and Professional Ethics-II	2021-2022				
		BOT-301	Molecular Plant Physiology	2021-2022	✓		✓	
		BOT-302	Molecular Biology and Techniques	2021-2022	✓		✓	
		BOT-303	Mushroom Cultivation	2021-2022	✓	+	✓	
		BOT-304A	Plant Resource and Human Welfare	2021-2022	✓	+	✓	
		BOT-304B	Gardening and Nursery Techniques	2021-2022	✓	+	✓	
		BOT-304C	Organic Farming	2021-2022	✓	+	✓	
		BOT-305P	Practical-I Molecular Plant Physiology & Molecular Biology and Techniques	2021-2022	✓		✓	
		BOT-306P	Practical-II Mushroom Cultivation	2021-2022	✓	✓	✓	
		BOT-401	Genomics and Proteomics	2021-2022	✓		✓	
		BOT-402	Plant Biotechnology	2021-2022	✓	✓	✓	
		BOT-403	Dissertation, Presentation & Viva	2021-2022	✓	+	✓	
		BOT-404A	Nanobiotechnology	2021-2022	✓	+	✓	
		BOT-404B	Ethnobotany and Plant Drugs	2021-2022	✓	✓	✓	
		BOT-404C	Horticulture	2021-2022	✓	✓	✓	
		BOT-405P	Practical-Genomics and Proteomics & Plant Biotechnology	2021-2022	✓	+	✓	
31	Biotechnology	BTH 101	Structure and Functions of Biomolecules	2021	✓			
		BTH 102	Advanced Tools and Techniques	2021	✓			
		BTH 103a	Microbiology and diseases	2021	✓			
		BTH 103b	Molecular Plant Physiology	2021				

BTH 104a	Cell biology and Genetics	2021	✓			
BTH 104b	Molecular Genetics	2021				
BTH 105P	Bio-molecules and Advanced Tools and Techniques	2021	✓		✓	
BTH 106P	Microbiology and Cell Biology	2021	✓		✓	
BTH 201	Enzymes and Intermediary Metabolism	2021	✓			
BTH 202	Molecular Biology	2021	✓			
BTH 203a	Immunology	2021	✓	✓		
BTH 203b	Cancer Biology	2021	✓			
BTH 204a	Research Methodology, Biostatistics and Bioinformatics	2021	✓			
BTH 204b	Proteomics	2021	✓			
BTH 205P	Enzymology, metabolism and Molecular Biology	2021	✓		✓	
BTH 206P	Immunology, Biostatistics and Bioinformatics	2021	✓		✓	
BTH 301	Genetic Engineering	2021	✓		✓	
BTH 302	Food and Industrial Biotechnology	2021	✓	✓	✓	
BTH 303 a.	Bioprocess Engineering and Technology	2021	✓			
BTH 303 b.	Legal, Ethical and Implications of Biotechnology	2021	✓			
BTH 303 c.	Emerging technologies in Biotechnology	2021	✓			
BTH 304 P	Genetic Engineering, Food and Industrial Biotechnology	2021	✓		✓	
BTH 305	Plant Tissue Culture	2021	✓	✓	✓	
BTH 306a	Bioethics	2021	✓			
BTH 306b	Bioinformatics	2021	✓		✓	
BTH 401	Environmental Biotechnology	2021	✓	✓		
BTH 402	Plant Biotechnology	2021	✓	✓		
BTH 403a	Animal Biotechnology	2021	✓			
BTH 403b	Applications of Biotechnology	2021	✓			
BTH 403c	Pharmaceutical Biotechnology	2021	✓			
BTH 404P	Environmental Biotechnology, Plant Biotechnology	2021	✓		✓	
BTH 405	MOOCS/Project	2021	✓			
BTH 406a	Applications of Biotechnology	2021	✓			
BTH 406b	Tools in Biotechnology	2021	✓			

CHE-101	Inorganic Chemistry- I	2021				
CHE-102	Organic Chemistry I	2021				
CHE-103	a)Physical Chemistry- I	2021				
	b)Chemistry of Nano materials	2021		✓	✓	
CHE-104	a)General Chemistry- I	2021				
	b)Green Chemistry	2021				
CHE-105	a)Inorganic Practical-I	2021				
	b) Physical Chemistry-I	2021				
CHE-106	a) OrganicChemistry- I	2021				
	b)General Chemistry-I	2021				
CHE-107	Human Values and Professional Ethics – I	2021				
CHE-201	Inorganic Chemistry- II	2021				
CHE-202	Organic Chemistry -II	2021				
CHE-203	(a)Physical Chemistry- II	2021				
	(b) Advanced Thermodynamics and Biophysical chemistry	2021		✓	✓	
CHE-204	a)General Chemistry- II	2021				
	b)Chemistry of contemporary society	2021				
CHE-205	a)Inorganic Practical-II	2021				
	b) Physical Chemistry-II	2021				
CHE-206	a)OrganicChemistry- II	2021				
	b)General Chemistry-II	2021				
CHE-207	Human Values and Professional Ethics – I	2021				
CHE-AC-301	Inorganic Spectroscopy & Thermal Methods of Analysis	2021		✓	✓	
CHE-AC -302	Organic Spectroscopy	2021		✓	✓	
CHE-AC-303	(a) Organic Chemistry III	2021				
	(b) Physical Chemistry III	2021				
CHE-AC-304	Classical Methods of Analysis	2021	✓	✓	✓	
CHE –AC- 305 A	Chemotherapy and drug analysis	2021	✓	✓	✓	
CHE –AC- 305 B	Instrumental methods of analysis	2021	✓	✓		
CHE- 306	(a) Spectral Techniques	2021	✓	✓		
	(b) Chromatographic Techniques	2021				
CHE-AC-401	Quality control and General principles	2021				
CHE-AC-402	Instrumental Methods of Analysis	2021	✓			
CHE-AC-403	(a) Applied and Environmental aspects	2021				
	(b)Bioinorganic, Bioorganic & Biophysical Chemistry	2021				
CHE-AC-404	Instrumental Methods of Analysis	2021	✓			
CHE-AC-405	Project work	2021				
CHE-406	(a)Drug Chemistry	2021	✓	✓	✓	
	(b) Electroanalytical Techniques	2021		✓	✓	
CHE-EC-301	Inorganic Spectroscopy & Thermal Methods of Analysis	2021				
CHE-EC -302	Organic Spectroscopy	2021				

		(a) Organic Chemistry III	2021				
		(b) Physical Chemistry III	2021				
		Water & Soil Analysis	2021	✓	✓		
		Chemotherapy and drug analysis	2021	✓	✓		
		Instrumental methods of analysis	2021				
		(a) Spectral Techniques	2021	✓	✓		
		(b) Chromatographic Techniques	2021	✓	✓		
		Energy Environment and Soils	2021			✓	
		Water Pollution monitoring and Environment Laws	2021	✓			
		(a) Air Pollution, Control Methods-Noise and Thermal pollution	2021			✓	
		(b) Bioinorganic, Bioorganic & Biophysical Chemistry	2021				
		Instrumental Methods of analysis – II	2021	✓		✓	
		Project work	2021				
		(a) Drug Chemistry	2021	✓		✓	
		(b) Electroanalytical Techniques	2021	✓		✓	
		Physical Chemistry-III	2021				
		Organic Spectroscopy	2021	✓			
		(a) Organic Chemistry III	2021				
		(b) Inorganic Spectroscopy & Thermal Methods of analysis	2021	✓		✓	
		Chemical kinetics	2021		✓		
		Chemotherapy and drug analysis	2021				
		Conductometry Colorimetry	2021				
		(a) Spectral Techniques	2021	✓		✓	
		(b) Chromatographic Techniques	2021	✓		✓	
		Electro Chemistry	2021		✓	✓	
		Thermodynamic, Polymers and Solid state chemistry	2021				
		(a) Chemical Kinetics	2021	✓			
		(b) Bioinorganic, Bioorganic & Biophysical Chemistry	2021				
		Instrumental Methods of Analysis	2021	✓			
		Project work	2021				
		(a) Drug Chemistry	2021	✓		✓	
		(b) Electroanalytical Techniques	2021	✓		✓	
33	Environmental Sciences	ENV-101	Ecology and Environment	2021	✓		
		ENV -102	Environmental Chemistry	2021	✓		
		ENV -103	Practical-I	2021	✓	✓	✓
		ENV -104	Practical-II	2021	✓	✓	✓
		ENV -105	Environmental Toxicology and Public Health	2021	✓		
		ENV -106	Biodiversity conservation and Management	2021	✓		✓
		ENV-201	Energy and Environment	2021	✓		✓
		ENV-202	Environmental Pollution	2021	✓		

ENV-203	Practical-I	2021	✓	✓	✓	
ENV-204	Practical-II	2021	✓	✓	✓	
ENV-205	Instrumental Techniques and applications	2021	✓		✓	
ENV-206	Environmental Laws, Policies and Legislation	2021	✓			
ENV-301	Waste Treatment an Management	2021	✓		✓	
ENV-302	Environmental Impact Assessment, Audit and Economics	2021	✓		✓	
ENV-303P	Practical-I	2021	✓	✓	✓	
ENV-304P	Basics of Statistical Methods and Computer Programmes	2021	✓			
ENV-305 A	Eco Tourism and Eco- restoration	2021	✓		✓	
ENV-305 B	Occupational Health and Industrial Safety	2021	✓	✓	✓	
ENV-305 C	Statistics, Computer Applications and Modeling	2021	✓		✓	
ENV-306 A	Natural Resources Conservation	2021	✓			
ENV-306 B	Environmental Education	2021	✓	✓	✓	
ENV-401	Water Resources and Watershed Management	2021	✓		✓	
ENV-402	Remote Sensing and GIS	2021	✓	✓	✓	
ENV-403	Practical-I	2021	✓	✓	✓	
ENV-404	Project Work and Comprehensive Viva-Voce	2021	✓	✓	✓	
ENV-405 A	Disaster Mitigation and Management	2021	✓		✓	
ENV-405B	Environmental Safety	2021	✓			
ENV-405 C	Environmental Management and Sustainable Development	2021	✓			
ENV-406 A	Forest Resources and Management	2021	✓			
ENV-406 B	Global Environmental Issues	2021	✓			
34	Fishery sciences & Aquaculture					
AQC 101	Concepts of Aquatic Ecology	2021				
AQC 102	Systematics And External Anatomy of Cultivable Organisms	2021				
AQC 103 A	Fish Nutrition and Water Quality Management	2021	✓			
AQC: 103 B	Environmental Monitoring and Bio deterioration	2021		✓	✓	
AQC- 104A	Coastal Aquaculture	2021	✓			
AQC 104 B	Ornamental Fish Culture	2021		✓	✓	
AQC 105	Identification and Morphology of Cultivable Organisms	2021				
AQC106	Fish Nutrition	2021				
AQC: 107	Human values Professional Ethics - I	2021				
AQC 201	Principles of Aquaculture	2021				
AQC 202	Physiology of Cultivable Organisms	2021				
AQC 203A	Fresh Water Aquaculture	2021		✓	✓	
AQC 203B	Capture fisheries	2021	✓			

AQC 204 A	Fishery Economics, Extension and Environmental Management	2021				
AQC 204: B	Limnology	2021				
AQC205	Soil and Water Characteristics	2021				
AQC206	Physiology of Fin Fish and Shell Fish	2021				
AQC: 207	Human values Professional Ethics - II	2021				
AQC 301	Microbiology and Fish Pathology	2021		✓		
AQC 302	Fish Immunology	2021				
AQC: 303A	Cell Biology and Genetics	2021	✓		✓	
AQC 303 B	Bioinformatics In Aquaculture	2021		✓	✓	
AQC 304	Microbiology and Fish Diseases	2021				
AQC 305	Fish Nutrition Technology	2021				
a)AQC 306A:	Fish Processing Technology	2021		✓	✓	
b) AQC306B:	Pollution and Toxicology	2021				
AQC 401	Aquaculture Biotechnology	2021	✓			
AQC402	Essentials Of Biochemistry	2021				
AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2021	✓			
AQC403B	Aquaculture Engineering	2021				
AQC 404	Biotechnology And Biochemical Estimations	2021				
AQC405	Project Work	2021				
AQC 406(A)	General Principles and Practices of Aquaculture	2021				
AQC 406 (B)	Fish Breeding and Hatchery Management	2021			✓	

35 Geography

GEG - 101	Geomorphology	2021			✓	
GEG - 102	Cartography	2021		✓		
GEG – 103(A)	Economic Geography	2021				
GEG – 103(B)	Human Geography	2021				
GEG – 103(C)	Environmental Geography	2021				
GEG – 104(A)	Oceanography	2021	✓		✓	
GEG – 104(B)	Computer Basics for Geography	2021				
GEG – 104(C)	Regional Geography of Andhra Pradesh	2021	✓			
GEG – 105	Map Projections	2021	✓			
GEG – 106	Techniques of Mapping and map analysis	2021	✓			
GEG-107	Human Values and Professional Ethics- I	2021				
GEG - 201	Climatology	2021	✓		✓	
GEG - 202	Geographical Thought	2021				
GEG – 203(A)	Principles of Remote Sensing	2021	✓			
GEG – 203(B)	Geography of Tourism	2021				
GEG – 203(C)	Industrial Geography	2021				
GEG – 204(A)	Physical Geography of India	2021				
GEG – 204(B)	Regional Geography of India	2021				

GEG – 204(C)	Social and Cultural Geography	2021				
GEG – 205	Interpretation of Topographical (S.O.I., U.S and O.S) and Weather Maps	2021	✓			
GEG – 206	Research Techniques	2021			✓	
GEG – 301	Urban Geography	2021				
GEG – 302	Geographical Information System (GIS)	2021				
GEG – 303(A)	Agricultural Geography	2021				
GEG – 303(B)	Transport geography	2021				
GEG – 303(C)	Disaster Management Studies	2021	✓			
GEG – 304	Geographical Information System (GIS)	2021	✓			
GEG – 305	GPS Survey and Report	2021	✓			
GEG – 306 (A)	Regional Geography of Andhra Pradesh	2021	✓			✓
GEG – 306 (B)	Geographical Information System (GIS) & Global Positioning System (GPS) and Applications	2021	✓			✓

36 Geology

GEO-101	Geomorphology	2021	✓			
GEO-102	Crystallography & Mineralogy	2021		✓		✓
GEO-103P	Crystallography & Mineralogy	2021	✓			
GEO-104P	Geomorphology & Paleontology	2021		✓		✓
GEO-105	Stratigraphy & Paleontology	2021		✓		
GEO-106	Human Values & Professional Ethics-I	2021				
GEO-201	Structural Geology and Geotectonics	2021				
GEO-202	Remote Sensing and GIS	2021	✓			✓
GEO-203P	Structural Geology & Sedimentology	2021	✓			
GEO-204P	Remote Sensing and GIS	2021	✓			
GEO-205	Sedimentology	2021				✓
GEO-206	Human Values & Professional Ethics-II	2021				
GEO-301	Igneous Petrology	2021	✓			
GEO-302	Metamorphic Petrology	2021		✓		
GEO-303P	Petrology	2021				✓
GEO-304P	Geochemistry	2021				
GEO-305	Geochemistry and Thermodynamics	2021	✓			✓
GEO-306	Computer Applications and Geostatistics	2021				✓
GEO-307	Dimensional Stones and Building Materials	2021				
GEO-308	Gemmology	2021	✓			✓
GEO-309	Surveying and Field Geology	2021				
GEO-401	Economic Geology	2021	✓			
GEO-402	Mineral Exploration, Mining & Engineering Geology	2021	✓			
GEO-403P	Economic Geology	2021		✓		
GEO-404P	Project Work	2021				
GEO-405	Hydrogeology	2021				✓
GEO-406	Environmental Geology & Natural Hazards	2021				✓
GEO-407	Water Shed Management	2021		✓		

		GEO-408	Medical Geology	2021		✓		
		GEO-409	Fuel Geology	2021				
37	Home sciences Food Science Nutrition & D							
		FSND-101	Food Chemistry and Analysis	2021	✓			
		FSND -102	Clinical Nutrition and Dietetics-I	2021			✓	
		FSND -103A	Food Science and Experimental Foods	2021			✓	
		FSND -103B	Baking Technology	2021	✓		✓	
		FSND -104A	Community Nutrition	2021			✓	
		FSND -104B	Nutrition during Life span	2021			✓	
		FSND -105	Practical I 101+103A/103B	2021	✓		✓	
		FSND -106	Practical II 102+104A/104B	2021	✓	✓	✓	
		FSND -107	Human Values and Professional Ethics-I	2021			✓	
		FSND -201	Nutritional Bio chemistry	2021			✓	
		FSND -202	Clinical Nutrition and Dietetics-II	2021	✓	✓		
		FSND -203A	Food Microbiology and Safety	2021	✓		✓	
		FSND -203B	Nutrition in Emergencies And Disaster Management	2021			✓	
		FSND -204A	Research Methodology	2021			✓	
		FSND -204B	Statistics and Computer Applications	2021			✓	
		FSND -205	Practical I 201+203A/203B	2021	✓		✓	
		FSND -206	Practical II 202+204A/204B	2021	✓	✓	✓	
		FSND -207	Human Values and Professional Ethics-II	2021			✓	
		FSND -301	Food Processing and Preservation Technology	2021	✓			
		FSND -302	Advances in Human Nutrition	2021			✓	
		FSND -303A	Nutrition Assessment Techniques	2021			✓	
		FSND -303B	Public Health Nutrition	2021			✓	
		FSND -304	301+302	2021	✓			
		FSND – 305	Institutional Food Service Management(T) +Practicals (P)	2021	✓			
		FSND -306A	Fundamentals of Food, Nutrition and Health	2021			✓	
		FSND -306B	Dynamics in Food Preparation	2021			✓	
		FSND -401	Food Safety Standards and Quality Control	2021	✓			
		FSND -402	Food Product Development and Marketing	2021	✓			
		FSND -403A	Nutrition for Health and Fitness	2021	✓			
		FSND -403B	Geriatric Nutrition	2021			✓	
		FSND -404	401+402	2021	✓	✓	✓	
		FSND- 405	Technology of Packaging(T+P)	2021			✓	
		FSND -406A	Child Growth and Development	2021			✓	

	FSND -406B	Disaster Management	2021			√	
Human Development and Child Welfare	HDCW-101	Advanced Study of Human Development -I	2021			√	
	HDCW-102	Curriculum for Early Years	2021			√	
	HDCW-103-A	Family Dynamics	2021	√		√	
	HDCW-103-B	Gender Issues in Human Development and Family Relations	2021			√	
	HDCW-104-A	Community Nutrition	2021			√	
	HDCW-104-B	Nutrition during Life Span	2021	√		√	
	HDCW-107	Human Values and Professional Ethics -I *(Audit Course)	2021				
	HDCW-201	Quality Standards in ECE	2021	√	√		
	HDCW-202	Theories of Human Development and Behaviour	2021			√	
	HDCW-203-A	Parent and Community Education	2021	√		√	
	HDCW-203-B	Infant Development and Stimulation	2021			√	
	HDCW-204-A	Research Methodology	2021			√	
	HDCW-204-B	Statistics and Computer Application	2021	√		√	
	HDCW-205	201+ 203-A / 203-B	2021				
	HDCW-206	202 + 204-A / 204-B	2021				
	HDCW-207	Human Values and Professional Ethics -II *(Audit Course)	2021				
	HDCW-301	Child Study Techniques	2021	√		√	
	HDCW-302	Children with Developmental Challenges	2021	√		√	
	HDCW 303-A	Organization and Management of Child Welfare Institutions	2021	√			
	HDCW 303-B	Child and Human Rights	2021				
	HDCW – 305	Life Skills Education (Theory) + (Practicals)	2021	√		√	
	HDCW 306 –A	Fundamentals of Food, Nutrition and Health	2021	√		√	
	HDCW 306-B	Dynamics in Food Preparation	2021				
	HDCW -401	Guidance and Counseling in Human Development	2021	√		√	
	HDCW -402	Advanced Study of Human Development -II	2021			√	
	HDCW -403-A	Rehabilitation and Management of Children with Special Needs	2021	√		√	
	HDCW -403-B	Gerontology	2021			√	
	HDCW-405	Human Recourse Management ((Theory) + (Practicals)	2021	√		√	
	HDCW 406-A	Growth and Development During Early Years	2021			√	

		HDCW 406-B	Disaster Management	2021				
	Extension Management and Communication							
		EMCT-101	Communication and Media Preparation (CMP)	2021	√		√	
		EMCT-102	Extension Education in Community Development (EECD)	2021	√		√	
		EMCT-103-A	Dynamics of Rural Society(DR)	2021	√			
		EMCT-103-B	Dynamics of Group Behavior (DGB)	2021	√		√	
		EMCT-104-A	Community Nutrition(CN)	2021			√	
		EMCT-104-B	Nutrition during Life Span(NLS)	2021	√	√		
		EMCT-105	Dynamics of Rural Society / Communication and Media Preparation & Dynamics of Group	2021	√			
		EMCT -106	Extension Education in Community Development & Community Nutrition / Extension Education in Community Development & Nutrition during Life Span	2021	√		√	
		EMCT-107	Human Values and Professional Ethics -I (HVPE) *(Audit Course)	2021			√	
		EMCT-201	Community Organization and Leadership (COL)	2021	√		√	
		EMCT-202	Entrepreneurial Development and Empowerment of Women (ED)	2021	√	√	√	
		EMCT-203-A	Educational Technology(ET)	2021	√		√	
		EMCT-203-B	Technology Transfer and Management (TTM)	2021	√	√	√	
		EMCT-204-A	Research Methodology (RM)	2021	√		√	
		EMCT-204-B	Statistics and Computer Application (SCA)	2021	√		√	
		EMCT-205	Community Organization and Leadership & Educational Technology/ Community Organization and Leadership & Technology Transfer and Management	2021	√		√	
		EMCT-206	Entrepreneurial Development and Empowerment of Women & Research Methodology/ Entrepreneurial Development and Empowerment of Women & Statistics and Computer Application	2021	√	√	√	
		EMCT-207	Human Values and Professional Ethics –II (HVPE)	2021	√		√	
		EMCT -301	Managerial Skills for Extension Professionals (MSEP)	2021	√		√	
		EMCT -302	Training and Development (T&D)	2021	√	√	√	
		EMCT 303-A	Rural Development and Administration (RDA)	2021	√		√	
		EMCT 303-B	Principles of Guidance and Counseling (PGC)	2021	√		√	

EMCT -304	Managerial Skills for Extension Professionals & Training and Development	2021	√			
EMCT – 305	NGO Management (NGOM) (Theory) + (Practicals)	2021	√		√	
EMCT-306 –A	Fundamentals of Food, Nutrition and Health (FFNH)	2021	√		√	
EMCT -306-B	Dynamics in Food Preparation (DFP)	2021	√		√	
EMCT-401	Communication Technologies in Extension (CTE)	2021	√		√	
EMCT -402	Participatory Programme Management (PPM)	2021	√		√	
EMCT -403-A	Extension Management (EM)	2021	√		√	
EMCT -403-B	Science & Technology for Rural Women (STW)	2021	√	√	√	
EMCT-404	Communication Technologies in Extension & Participatory Programme Management	2021	√		√	
EMCT-405	Local Government in AP (LGAP) ((Theory) + (Practicals)	2021	√		√	
EMCT 406-A	Growth and Development During Early Years (GDEA)	2021	√		√	
EMCT 406-B	Disaster Management (DM)	2021	√		√	
Food Technology						
FT 101	Food Chemistry and Analysis	2021	√			
FT 102	Cereals, Legumes and Oil seed Technology	2021	√			
FT 103-A	Food Science and Experimental Foods	2021	√			
FT 103-B	Baking Technology	2021		√	√	
FT 104-A	Community Nutrition	2021	√			
FT 104-B	Nutrition during life span	2021				
FT 105	101+103-A/103-B	2021	√		√	
FT 106	102+104-A/104-B	2021	√		√	
FT 107:	Human Values and Professional Ethics-I	2021				
FT 201	Fruit and Vegetable Technology	2021	√		√	
FT 202	Dairy Technology	2021	√		√	
FT 203-A	Food Microbiology and Safety	2021	√		√	
FT 203-B	Nutrition in Emergencies And Disaster Management	2021				
FT 204-A	Research Methodology	2021			√	
FT 204-B	Statistics and Computer Applications	2021			√	
FT 205	201+203-A/203-B	2021	√		√	
FT 206	202+204-A/204-B	2021	√		√	
FT 207	Human Values and Professional Ethics-II	2021			√	
FT 301	Food Processing and Preservation Technology	2021	√		√	

		FT 302	Live stock and Sea Food Technology	2021	√			
		FT 303-A	Technology of Spices, Condiments and Plantation crops	2021	√			
		FT 303-B	Basics of Food Engineering	2021	√		√	
		FT 304	301+302	2021	√	√	√	
		FT 305	Food Industry Management (T) +(Practicals)	2021	√	√	√	
		FT 306-A	Fundamentals of Food, Nutrition and Health	2021				
		FT 306-B	Dynamics in Food Preparation	2021				
		FT 401	Food Safety Standards and Quality Control	2021	√		√	
		FT 402	Food Product Development and Marketing	2021	√		√	
		FT 403-A	Nutrition for Health and Fitness	2021	√	√		
		FT 403-B	Unit Operations in Food Industry	2021	√		√	
		FT 404	401+402	2021	√	√	√	
		FT 405	Technology of Packaging (T+P)	2021	√	√		
		FT 406-A	Child Welfare Programmes	2021				
		FT 406-B	Disaster Management	2021				
38	Mathematics	MA 101	Algebra	2021			√	
		MA 102	Real analysis	2021			√	
		MA 103	Ordinary Differential equations	2021			√	
		MA 104	Complex analysis	2021			√	
		MA 105	Computer Oriented Numerical Methods	2021	√		√	
		MA 106	Human Values & Professional Ethics-I	2021	√	√	√	
		MA 201	Galois Theory	2021			√	
		MA 202	Partial Differential Equations	2021			√	
		MA 203	Topology	2021			√	
		MA 204	a) Advanced Complex analysis	2021			√	
	b) Semi group theory							
	c) Non linear Analysis							
		MA 205	Human Values & Professional Ethics-II	2021	√	√	√	
		MA 206	Measure and Integration	2021			√	
		MA 301	Commutative Algebra	2021			√	
		MA 302	Functional Analysis	2021			√	
		MA 303	Classical Mechanics	2021	√		√	
		MA 304	a) Differential Geometry	2021			√	
	b) Cryptography		√		√	√		
	c) Linear Algebra							
		MA 305	a) Discrete Mathematics	2021			√	
	b) Business Mathematics		√		√	√		
	c) Basic Mathematics for Social							

			Sciences					
		MA 401	Number Theory	2021				✓
		MA 402	Banach Algebra	2021				✓
		MA 403	Graph Theory	2021	✓	✓		✓
		MA 404	a) Mathematical Statistics	2021	✓	✓		✓
			b) Approximation Theory					
			c) Algebraic coding Theory					
		MA 405	a) Operation Research	2021	✓	✓		✓
			b) Theoretical Computer Science					
			c) Biomechanics					
	Applied Mathematics	AM 101	Methods of Applied Mathematics	2021				✓
		AM 102	Real analysis	2021				✓
		AM 103	Ordinary Differential equations	2021				✓
		AM 104	Complex analysis	2021				✓
		AM 105	Human Values & Professional Ethics-I	2021	✓	✓		✓
		AM 106	Computer Oriented Numerical Methods	2021	✓			✓
		AM 201	Mathematical Modeling	2021				✓
		AM 202	Partial Differential Equations	2021				✓
		AM 203	Topology	2021				✓
		AM 204	d) Advanced Complex analysis	2021				✓
			e) Semi group theory					
			f) Non linear Analysis					
		AM 205	Human Values & Professional Ethics-II	2021	✓	✓		✓
		AM 206	Measure and Integration	2021				✓
		AM 301	Continuum Mechanics	2021	✓			✓
		AM 302	Functional Analysis	2021				✓
		AM 303	Classical Mechanics	2021	✓			✓
		AM 304	d) Differential Geometry	2021	✓	✓		✓
			e) Cryptography					
			f) Linear Algebra					
		AM 305	a) Discrete Mathematics	2021	✓	✓		✓
			b) Business Mathematics					
			c) Basic Mathematics for Social Sciences					
		AM 401	Number Theory	2021				✓
		AM 402	Fluid Dynamics	2021	✓			✓
		AM 403	Graph Theory	2021	✓			✓
		AM 404	d) Mathematical Statistics	2021	✓	✓		✓
			e) Approximation Theory					

		f) Algebraic coding Theory					
		a) Operation Research					
	AM 405	b) Theoretical Computer Science	2021	✓	✓	✓	
		c) Biomechanics					
39	Micro Biology						
	MB-101	Introductory Microbiology	2021	√		√	
	MB-102	Microbial Physiology	2021			√	
	MB-103	Biochemistry	2021	√	√	√	
	MB-104	Biophysics and Biostatistics	2021	√		√	
	MB-105	Introductory Microbiology & Microbial Physiology	2021			√	
	MB-106	Biochemistry & Biophysics and Biostatistics	2021	√		√	
	MB-201	Molecular Biology	2021	√	√	√	
	MB-202	Recombinant DNA technology	2021	√	√	√	
	MB-203	Immunology	2021	√	√	√	
	MB-204	Medical Microbiology	2021	√	√	√	
	MB-205	Molecular Biology and Recombinant DNA Technology	2021	√	√	√	
	MB-206	Immunology and Medical Microbiology	2021	√	√	√	
	MB-301	Bacteriology and Virology	2021	√		√	
	MB-302	Agricultural Microbiology	2021	√	√	√	
	MB-303	a) Industrial Microbiology b) Downstream processing Technology	2021	√	√	√	
	MB-304	Bacteriology and Virology and Agricultural Microbiology	2021	√	√	√	
	MB-305	Food and Dairy Microbiology	2021	√	√	√	
	MB-306	a) Computational biology b) Microbial genomics and proteomics	2021	√	√	√	
	MB-401	Bacteriology and Virology	2021			√	
	MB-402	Agricultural Microbiology	2021	√	√	√	
	MB-403	a) Industrial Microbiology b) Downstream processing Technology	2021	√	√	√	
	MB-404	Bacteriology and Virology and Agricultural Microbiology	2021			√	
	MB-405	Food and Dairy Microbiology	2021	√	√	√	
	MB-406	a) Computational biology	2021	√	√	√	

	IMB-400	b) Microbial genomics and proteomics	2021	√	√	√	
Industrial Microbiology	IMB-101	Introductory Microbiology	2021	√		√	
	IMB-102	Microbial Physiology	2021			√	
	IMB-103P	Biochemistry	2021	√	√	√	
	IMB-104	Biophysics and Biostatistics	2021	√		√	
	IMB-105	Introductory Microbiology & Microbial Physiology	2021			√	
	IMB-106	Biochemistry & Biophysics and Biostatistics	2021	√		√	
	IMB-201	Molecular Biology	2021	√	√	√	
	IMB-202	Recombinant DNA technology	2021	√	√	√	
	IMB-203	Immunology	2021	√	√	√	
	IMB-204	Medical Microbiology	2021	√	√	√	
	IMB-205	Molecular Biology and Recombinant DNA Technology	2021	√	√	√	
	IMB-206	Immunology and Medical Microbiology	2021	√	√	√	
	IMB-301	Basics of Industrial Microbiology	2021	√		√	
	IMB-302	Bioprocessing of Industrial Microorganisms	2021	√	√	√	
	IMB-303	a) Pharmaceutical Microbiology b) Downstream Processing	2021	√	√	√	
	IMB-304	Basics of Industrial Microbiology and Bioprocessing of Industrial Microbiology	2021	√		√	
	IMB-305	Industrial Food Microbiology	2021	√	√	√	
	IMB-306	a) Computational Biology b) Industrial Biotechnology	2021	√	√	√	
	IMB-401	Animal and plant cell culture	2021	√		√	
	IMB-402	Industrial based Microbial clean technology	2021	√		√	
	IMB-403	a) Industrial production of Microbial product b) Industrial Microbial Technology	2021	√	√	√	
	IMB-404	Animal and plant cell culture and Industrial based Microbial clean technology	2021	√		√	
	IMB-405	Field Trip/ Industrial Tour Report / Dissertation	2021			√	
	IMB-406	a) Bioethics, Biosafety and Intellectual property rights b) Microbial Production of Alcoholic beverages.	2021	√	√	√	
	40	Physics					
		PHY101	1.ClassicalMechanicsandTheoryofRelativity	2021			
	PHY102	2.Solid State Physics	2021				
	PHY103(a)	1.Analogand DigitalElectronics	2021		√		

PHY103(b)	2.ComputationalMethods &Clanguage	2021		✓		
PHY103(c)	3.Sensorsand Transducers	2021		✓		
PHY104(a)	1.AtomicandMolecularPhysics	2021			✓	
PHY104(b)	2.Optical,MicrowaveandSatelliteCommunication s	2021	✓			
PHY104(c)	3.ComputerArchitectureandNetworking	2021	✓			
PHY105	Paper1&3(GeneralLab)	2021				
PHY106	Paper3 &4(ElectronicsLab)	2021				
PHY201	1. StatisticalMechanics	2021	✓			
PHY202	2.EM Theory,Lasers&ModernOptics	2021		✓	✓	
PHY203(a)	1.NuclearPhysics	2021				
PHY203(b)	2.ICfabricationTechniques	2021			✓	
PHY203(c)	3.AdvancedMicroprocessorsand itsApplications	2021			✓	
PHY204(a)	1.MathematicalPhysics	2021				
PHY204(b)	2.IntroductiontoVLSIdesign	2021		✓		
PHY204(c)	3.MaterialScienceForIndustrialApplications	2021			✓	
PHY205	Paper1&3(GeneralLab)	2021				
PHY301	1.IntroductoryQuantumMechanics	2021				
PHY302	2.Physics ofSemiconductorDevices	2021				
PHY303(a)	1.AppliedSpectroscopy	2021			✓	
PHY303(b)	2.CondensedMatterPhysics	2021				
PHY303(c)	3.EmbeddedSystems	2021		✓	✓	
PHY304	ElectiveLabAdvances inPhysics	2021				
PHY306(a)	1.BasicSpectroscopicTechniques	2021			✓	
PHY306(b)	NanomaterialsandDevices	2021		✓		
PHY401	1.AdvancedQuantumMechanics	2021			✓	
PHY402	2.PhysicsofAdvancedMaterials	2021				
PHY403(a)	1.Photonics	2021	✓			
PHY403(b)	2.SolarEnergy-Thermal andPhotovoltaicProperties	2021				
PHY403(c)	3.VacuumandThinFilmTechnology	2021			✓	
PHY404	ElectiveLab	2021				
PHY405	Advanced Characterization Techniques	2021			✓	
PHY406(a)	1.WirelessCommunications	2021				
PHY406(b)	2. VacuumTechnology&Applications	2021		✓	✓	
Instrumentation	INS – 101	Introduction to Instrumentation and Control System	2021			
	INS – 102	Analog Devices and Industrial Electronics	2021	✓		
	INS - 103(a)	Digital Techniques and Principles of Communications	2021			
	INS - 103(b)	Power Electronics	2021	✓		
	INS - 103(c)	Industrial Product Instrumentation	2021	✓	✓	✓

INS - 104 (a)	Programming in "C"	2021				
INS - 104 (b)	Renewable Sources of Energy	2021				
INS -104 (c)	Opto Electronics	2021		✓	✓	
INS - 105	Paper 1& 3 (Analog and Digital Electronics Lab)	2021			✓	
INS – 106	Paper 3 &4 (" C " Programs Lab)	2021			✓	
INS – 201	Industrial Instrumentation	2021				
INS – 202	Electronic Instrumentation	2021				
INS - 203(a)	Sensors and Signal Conditioners	2021		✓	✓	
INS - 203(b)	Network Analysis	2021				
INS - 203(c)	Spectroscopic Instrumentation	2021	✓	✓		
INS - 204(a)	Microprocessors and Interfacing	2021				
INS - 204(b)	Robotics	2021	✓	✓	✓	
INS - 204(c)	Electronic Measurement Instruments	2021	✓			
INS – 205	Paper 1& 3 (Transducers Lab)	2021				
INS – 206	Paper 3 & 4 (Microprocessors Lab)	2021				
INS – 301	Analytical Instrumentation	2021		✓		
INS – 302	Digital Signal Processing	2021		✓		
INS - 303(a)	Biomedical Instrumentation	2021	✓			
INS - 303(b)	Micro Electro Mechanical Systems	2021	✓			
INS - 303(c)	Instrumentation for Environmental Science	2021	✓		✓	
INS – 304	Analytical Instrumentation Lab	2021	✓		✓	
INS – 305	Microcontrollers and Interfacing	2021	✓			
INS - 306(a)	Computer Architecture and Organization	2021			✓	
INS - 306(b)	Industrial Organization and Management	2021			✓	
INS - 401	Introduction to VLSI Circuits	2021	✓			
INS – 402	Embedded Systems and Real time Operating Systems	2021	✓			
INS - 403(a)	Programmable Logic Controllers	2021				
INS - 403(b)	Computational Mathematics	2021				
INS - 403(c)	Electrical Engineering Materials	2021				
INS – 404	VLSI Lab	2021			✓	
INS – 405	Project Work	2021			✓	
INS - 406(a)	Agro Based Instrumentation	2021			✓	
INS - 406(b)	Industrial Automation	2021			✓	
Electronics						
ELE-101	Analog Integrated Circuits and Applications	2021			✓	
ELE-102	Digital Integrated Circuits and Applications	2021			✓	
ELE-103 (a)	Programming in C with data structures	2021			✓	
ELE-103 (b)	Python Programming	2021			✓	
ELE-103 (c)	Programming in Matlab	2021			✓	
ELE-104 (a)	Mathematical Methods of Signal & System analysis	2021				

ELE-104 (b)	Optical Communications	2021	✓			
ELE-104 (c)	Wireless communications	2021	✓			
ELEP-105	Analog and Digital IC's (Lab)	2021	✓		✓	
ELEP-106	Programming in C (Lab)	2021	✓		✓	
ELE-201	Advanced Microprocessors and Microcomputers	2021			✓	
ELE-202	Digital Communications	2021	✓			
ELE-203(a)	Semiconductor Materials and Devices	2021	✓			
ELE-203(b)	Sensors and Transducers	2021	✓			
ELE-203(c)	Atmospheric and Space Instrumentation Techniques	2021			✓	
ELE-204 (a)	Control Systems	2021			✓	
ELE-204 (b)	Medical Instrumentation	2021			✓	
ELE-204 (c)	Data Mining and Information Security	2021				
ELEP-205	8086 Microprocessor (Lab)	2021			✓	
ELEP-206	Digital Communications (Lab)	2021			✓	
ELE-301	Digital Signal Processing	2021			✓	
ELE-302	Digital system Design-VHDL	2021			✓	
ELE-303(a)	Microcontrollers and Applications	2021			✓	
ELE-303(b)	Computer organization	2021	✓			
ELE-303(c)	Digital Image Processing	2021	✓			
ELEP-304	Digital Signal Processing (Lab)	2021				
ELE-305	Peripheral interface controllers VHDL & Microcontrollers (Lab) (Hands on training)	2021				
ELE-306 (a)	Microprocessors, PC Hardware and Interfacing	2021				
ELE-306 (b)	Satellite Communications	2021	✓			
ELE-401	Advanced Communication Systems	2021			✓	
ELE-402	Introduction to VLSI circuits	2021	✓			
ELE-403(a)	Data Communications and Networking	2021	✓			
ELE-403(b)	Industrial Electronics	2021	✓			
ELE-403 (c)	EMI and EMC	2021	✓			
ELEP-404P	Communication (Lab)	2021			✓	
ELE-405	Internet of Things/ Project Work	2021			✓	
ELE-406 (a)	Embedded systems with PIC Microcontrollers	2021	✓			
ELE-406 (b)	Microwaves	2021	✓			
41	Psychology					
	PSY 103a	Psychopathology-I (CF)	2021	✓		
	PSY 103b	Psychological Measurement-I(CF)	2021	✓		
	PSY 103c	Positive Psychology (CF)	2021	✓		
	PSY 104a	Child Development Psychology	2021	✓		✓
	PSY 104b	Psychological Measurement & Statistics	2021	✓		
	PSY 104c	Forensic Psychology	2021	✓		✓
	PSY 105	Practicals related to General Psychology –II& Psychopathology-II	2021			✓

PSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2021				
PSY 203a	Psychopathology-II (CF)	2021	√			
PSY 203b	Psycho-Diagnosis (CF)	2021	√		√	
PSY 203c	Computer Application in Psychological Research-(CF)	2021	√		√	
PSY 204b	Consumer Behavior	2021	√			
PSY 204c	Industrial & Organizational Psychology	2021	√			
PSY 205	Practicals related to General Psychology –II& Psychopathology-II	2021			√	
PSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2021			√	
PSY 301	Counseling Psychology (CC)	2021	√		√	
PSY 302	Psychology of Personality (CC)	2021	√			
PSY 303a	Organizational Behavior & HRM (GE)	2021	√			
PSY 303b	Therapeutic Approaches in Counseling-I	2021	√		√	
PSY 303c	Health Psychology(GE)	2021	√			
PSY 304	Core & Generic Elective	2021	√		√	
PSY 305	Stress Management Theory & Practical	2021	√		√	
PSY 306	Personality Development (OE)	2021	√			
PSY 401	Therapeutic Approaches in Counseling-II(CC)	2021	√		√	
PSY 401c	c. Rehabilitation Psychology (GE)	2021	√		√	
PSY 404	Core & Generic Elective	2021	√		√	
PSY 406	Life Skills (OE)	2021	√		√	
Counselling Psychology						
CPSY 103a	Psychopathology-I (CF)	2021	√			
CPSY 103b	Psychological Measurement-I(CF)	2021	√			
CPSY 103c	Positive Psychology (CF)	2021	√			
CPSY 104a	Child Development Psychology	2021	√		√	
CPSY 104b	Psychological Measurement & Statistics	2021	√			
CPSY 104c	Forensic Psychology	2021	√		√	
CPSY 105	Practicals related to General Psychology –II& Psychopathology-II	2021			√	
CPSY 106	Practicals related to Psychopathology & Psychological Measurement & Statistics in Behavior Sciences	2021				
CPSY 203a	Psychopathology-II (CF)	2021	√			
CPSY 203b	Psycho-Diagnosis (CF)	2021	√		√	
CPSY 203c	Computer Application in Psychological Research-(CF)	2021	√		√	
CPSY 204b	Consumer Behavior	2021	√			
CPSY 204c	Industrial & Organizational Psychology	2021	√			

		CPSY 205	Practicals related to General Psychology –II& Psychopathology-II	2021			√	
		CPSY 206	Practicals related to Psychopathology-II & Lifespan Psychology & Consumer Behavior	2021			√	
		CPSY 301	Counselling Process	2021	√		√	
		CPSY 302	Counselling Skills	2021	√			
		CPSY 303a	Therapeutic Approaches in Counseling-I	2021	√			
		CPSY 303b	Counseling in Organizational Settings	2021	√		√	
		CPSY 303c	Health Psychology	2021	√			
		CPSY 304	Practicals related to counseling skills & Counseling in Organizational Settings	2021	√		√	
		CPSY 305	Stress Management & Counseling Psychology	2021	√		√	
		CPSY 306	Personality Development	2021	√			
		CPSY 401	Applications of Counselling in Special Areas	2021	√		√	
		CPSY 402	Therapeutic Approaches in Counselling-II	2021	√		√	
		CPSY 403a	Counseling in Hospital Settings	2021	√		√	
		CPSY 403b	Counseling in Community Settings Family Counseling	2021	√		√	
		CPSY 403c	Family Counseling	2021	√		√	
		CPSY 404	Practicals related to counseling techniques & applications in different areas	2021	√		√	
		CPSY 405	Allotment of Project work (Theory and Practice)	2021				
		CPSY 406	Life Skills (OE)	2021				
42	Statistics & Applied Statistics	ST - 104(a) & APST - 104(a)	Statistical Analysis using Excel and SPSS	2021-22			√	
		ST - 104 (b)& APST - 104 (b)	Python	2021-22			√	
		ST - 204 (b)& APST - 204 (b)	Industrial Statistics and Quality Control	2021-22		√		
		ST -305	Statistical Analysis Using R + R Practicals	2021-22	√			
		ST - 403 (b)	Total Quality Management and Six - Sigma	2021-22		√		
43	Virology	VR-101	Biological Chemistry	2021	√			
		VR-102	Analytical Techniques	2021	√	√	√	
		VR-103(P)	Biological Chemistry and Analytical Techniques	2021	√	√	√	
		VR-104(P)	General Microbiology and Virology	2021	√		√	

		VR-105	General Microbiology and Virology	2021	✓			
		VR-106	Human values and Professional ethics - I	2021				
		VR-201	Cell and Molecular Biology	2021	✓			
		VR-202	Recombinant DNA Technology	2021	✓	✓	✓	
		VR-203(P)	Cell and Molecular Biology & Recombinant DNA Technology	2021	✓	✓	✓	
		VR-204(P)	Immunology	2021	✓	✓	✓	
		VR-206	Human values and Professional ethics- II	2021				
		VR-301	Plant Virology	2021	✓			
		VR-302	Plant Viruses and Diseases	2021	✓		✓	
		VR-303(P)	Plant Virology and Plant Virus Diseases	2021	✓	✓	✓	
		VR-304(P)	a) Molecular Virology (OR)	2021	✓	✓	✓	
			b) Tumor Virology					
		VR-305	(a) Molecular Virology (OR)	2021	✓	✓	✓	
			(b) Tumor Virology					
		VR-306	(a) Veterinary and agricultural Viruses and their management (OR)	2021	✓	✓		
			(b) Emerging and Reemerging Infectious Viral Diseases					
		VR-401	Animal and Human Virology	2021	✓			
		VR-402	Animal and Human Virus Diseases	2021	✓		✓	
		VR-403(P)	Animal and Human Virology & Virus Diseases	2021	✓	✓	✓	
		VR-404(P)	(a) Applied Virology	2021	✓	✓	✓	
			(OR)					
			(b) Virus-based Biotechnology					
		VR-405	(a) Applied Virology	2021	✓	✓	✓	
			(OR)					
			(b) Virus-based Biotechnology					
		VR-406	(a) Human viral diseases	2021	✓	✓	✓	
			(OR)					
			(b) Clinical Virology					
44	Zoology	ZOO-101	Invertebrata & Chordata	2021				
		ZOO-102	Metabolic Regulation & Cell Function	2021	✓		✓	
		ZOO-103A	Genetics & Evolution	2021	✓			
		ZOO-103B	Endocrinology	2021	✓		✓	
		ZOO-104A	Tools & Techniques	2021	✓	✓	✓	
		ZOO-104B	Genetic Engineering	2021	✓	✓	✓	
		ZOO-105P	Practical-I	2021	✓		✓	
			Invertebrata & Chordata and Genetics & Evolution/ Endocrinology					
			Practical-II					

ZOO-106P	Metabolic Regulation & Cell Function and Tools & Techniques/ Genetic Engineering	2021	✓		✓	
ZOO-107	Audit Course	2021			✓	
	Human Values and Professional Ethics-I					
ZOO-201	Molecular Biology	2021	✓	✓	✓	
ZOO-202	Cell Biology & Immunology	2021	✓		✓	
ZOO-203A	Neurobiology & Animal Behavior	2021	✓		✓	
ZOO-203B	Bioinformatics & Biostatistics	2021	✓		✓	
ZOO-204A	Enzymology	2021	✓		✓	
ZOO-204B	Pathobiology	2021	✓		✓	
ZOO-205P	Practical-I	2021				
	Molecular Biology and Neurobiology & Animal Behavior / Bioinformatics & Biostatistics		✓		✓	
ZOO-206P	Practical-II	2021				
	Cell Biology & Immunology and Enzymology/ Pathobiology		✓		✓	
ZOO-207	Audit Course	2021			✓	
	Human Values and Professional Ethics-II					
ZOO-301	Developmental Biology	2021	✓		✓	
ZOO-302	Environmental Biology	2021	✓		✓	
ZOO-303A	Animal Biotechnology	2021	✓		✓	
ZOO-303B	Microbiology	2021	✓		✓	
ZOO-304P	Practical-I	2021				
	Developmental Biology & Environmental Biology and Animal Biotechnology/ Microbiology		✓		✓	
ZOO-305	Economic Zoology	2021	✓	✓	✓	
ZOO-306A	Environmental Impact Assessment & Green Auditing	2021	✓		✓	
ZOO-306B	Human Health and Infectious diseases	2021	✓	✓	✓	
ZOO-401	Toxicology	2021	✓		✓	
ZOO-402	Comparative Animal Physiology	2021	✓		✓	
ZOO-403A	Biodiversity and Conservation	2021	✓	✓	✓	
ZOO-403B	Animal husbandry and poultry farming	2021	✓	✓	✓	
ZOO-404P	Practical-	2021				
	Toxicology, Comparative Animal Physiology and Biodiversity and Conservation/ Animal husbandry and poultry farming		✓		✓	
ZOO-405	Principles and Practices of Aquaculture	2021	✓	✓	✓	
ZOO-406A	Environmental Microbiology	2021	✓		✓	
ZOO-406B	Medical Biotechnology, IPR, Biostatistics and Bioethics	2021	✓	✓	✓	

Animal Biotechnology	ABT-101	Metabolic Regulation & Cell Function (MRCF)	2021	✓			
	ABT-102	Tools & Techniques (TT)	2021	✓		✓	
	ABT-103A	Microbiology and Diseases	2021	✓		✓	
	ABT-103B	Environmental Biology	2021	✓		✓	
	ABT-104A	Environmental Biotechnology	2021	✓		✓	
	ABT-104B	Human Health and Infectious Diseases	2021			✓	
	ABT-105P	Practical-1 MRCF & Microbiology and Diseases/ Environmental Biology	2021	✓		✓	
	ABT-106P	Practical-2 TT & Environmental Biotechnology/ Human Health and Infectious Diseases	2021	✓		✓	
	ABT-107	Audit Course-I Human Values and Professional Ethics-I	2021			✓	
	ABT-201	Molecular Biology (MB)	2021	✓		✓	
	ABT-202	Animal Cell culture & Stem Cell Biology (ACC- SCB)	2021	✓	✓	✓	
	ABT-203A	Cell Biology & Immunology (CB&IM)	2021	✓		✓	
		Animal Biotechnology					
	ABT-203B	Animal Biotechnology	2021	✓		✓	
	ABT-204A	Toxicology	2021	✓	✓	✓	
	ABT-204B	Endocrinology	2021	✓		✓	
	ABT-205P	Practical -1 MB & CB&IM/ Animal Biotechnology	2021	✓		✓	
	ABT-206P	Practical-II ACC-SCB & Toxicology/ Endocrinology	2021	✓		✓	
	ABT-207	Audit Course-II HUMAN VALUES AND PROFESSIONAL ETHICS-II	2021			✓	
	ABT-301	Enzymology (ENZ)	2021	✓		✓	
	ABT-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2021	✓	✓	✓	
	ABT-303A	Bioinformatics & Biostatistics	2021	✓		✓	
	ABT-303B	Genetic Engineering (GE)	2021	✓		✓	
	ABT-304P	ENZ/ ARBTT/ Bioinformatics & Biostatistics/GE	2021	✓		✓	
	ABT-305	Bio resource Technology (Apiculture, Sericulture, Aquaculture, Vermiculture)	2021	✓		✓	
	ABT-306A	Animal Biotechnology & Industrial Applications	2021	✓	✓	✓	
	ABT-306B	Cancer Biology	2021	✓		✓	
	ABT-401	Medical Biotechnology (MBT)	2021	✓		✓	
	ABT-402	Fermentation Technology and Downstreaming Process (FTDSP)	2021	✓		✓	

		ABT-403A	Drug design and Development	2021	✓		✓	
		ABT-403B	Biosafety, Bio Ethics & Intellectual Property rights	2021	✓		✓	
		ABT-404	Project(Dissertation preparation & Submission)	2021	✓	✓	✓	
		ABT-405	Viva-Voce	2021			✓	
		ABT-406A	Advanced Genomics and Proteomics	2021	✓		✓	
		ABT-406B	Animal Cell Culture Techniques	2021	✓		✓	
45	Business Management							
		MBA-101	Management and Organizational Behaviour	2021			✓	
		MBA-102	Managerial Communication	2021	✓	✓	✓	
		MBA-104	Accounting for managers	2021	✓			
		MBA-108	Human Values and Professional Ethics-I	2021	✓	✓	✓	
		MBA-201	Marketing Management	2021			✓	
		MBA-204	Production Management	2021			✓	
		MBA-208	Leadership values and Styles	2021		✓	✓	
		MBA-302	Entrepreneurship	2021		✓		
		MBA-303	Industrial Project Course	2021	✓	✓		
		MBA-401	Digital Business Models	2021	✓			
		MBA-402	Strategic Management	2021			✓	
		MBA-404	Organisation Development	2021			✓	
46	Computer Science							
		MCA 101	Discrete Mathematical Structures	2021	✓			
		MCA 102	Object Oriented Programming with Java	2021	✓			
		MCA 103	Computer Organization	2021	✓			
		MCA 104	Operating Systems	2021	✓			
		MCA 105	105A.Accounting and Financial management	2021		✓		
			105B.Accounting Essentials for Computer Applications	2021		✓		
		MCA 106P	Software Lab I (based on 101 & 103)	2021	✓			
		MCA 107 P	Object Oriented Programming Lab	2021	✓			
		MCA 108P	Operating Systems Lab	2021	✓			
		MCA 201	Computer Oriented Operations Research	2021	✓			
		MCA 202	Data Structures using Java	2021	✓			
		MCA 203	Data Communication and Computer Networks	2021	✓			
		MCA 204	Advanced Database Management Systems	2021	✓			
		MCA 205A	205A. E-Commerce	2021	✓			
		MCA 205B.	Cyber Security	2021	✓			
		MCA 205C	Neural Networks	2021	✓			

	MCA 206	Group Discussion	2021	✓			
	MCA 207P	Software Lab II	2021	✓			
		(Based on 201 & 203)	2021	✓			
	MCA 208P	Data Structures Lab	2021	✓			
	MCA 209P	Advanced Database Management Systems Lab	2021	✓			
M.Sc Computer Science	MSCS -101C	Computer Organization	2021	✓			
	MSCS -102C	Programming in Java & Data Structures	2021	✓			
	MSCS -103C	Operating Systems	2021	✓			
	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2021	✓			
	MSCS – 104 GE - B	Computer Oriented Operational Research	2021	✓			
	MSCS - 05CF	Environmental Studies	2021		✓		
	MSCS - 106EF	A. PC Hardware Basics	2021		✓		
	MSCS - 106EF	B. Statistical Methods	2021		✓		
	MSCS - 107P1		2021	✓		✓	
	MSCS - 108P2		2021	✓		✓	
	MSCS -201C	Advanced Data Base Management System	2021	✓			
	MSCS -202C	Computer Networks	2021	✓			
	MSCS -203C	Computer Graphics	2021	✓			
	MSCS- 204 GE – A	E- Commerce	2021	✓	✓		
	MSCS- 204 GE B	Accounting And Financial Management	2021	✓			
	MSCS- 205CF	Human Rights And Value Education	2021	✓			
	MSCS- 206 EF A	Principles Of Management	2021	✓	✓		
	MSCS- 206 EF B	Internet Of Things	2021	✓			
	MSCS- 207P1		2021	✓		✓	
	MSCS- 208P2		2021	✓		✓	
	MSCS-301C	Data Warehousing And Data Mining	2021	✓			
	MSCS-302C	Web Technologies	2021	✓			
	MSCS-303C	Software Engineering	2021	✓	✓		
	MSCS -304- GE-A	Systems Programming	2021	✓			
	MSCS -304- GE-B	Computer Algorithms	2021	✓			
	MSCS -304- GE-C	UID Using .Net Technologies	2021	✓			
	MSCS -304- GE-D	IT in Forensic Science	2021	✓			
	MSCS -304- GE-E	Software Testing	2021	✓			

		MSCS -305 GE-A	Cloud Computing	2021	✓			
		MSCS -305 GE-B	Big Data Analytics	2021	✓			
		MSCS -305 GE-C	Artificial Neural Networks	2021	✓			
		MSCS -305 GE-D	Cyber Security	2021	✓			
		MSCS -305 GE-E	Mobile App Development	2021	✓			
		MSCS - 306OE	The courses offered by other departments	2021	✓			
			1. Programming in C	2021				
			2. Office Automation	2021				
			3. Internet	2021				
			Fundamentals and Web Designing	2021				
		MSCS - 307P1		2021	✓		✓	
		MSCS - 308P2		2021	✓		✓	
		MSCS – 401	Major Project Work	2021	✓		✓	
47	Commerce M.com(R)							
		101	Accounting Standards & Reporting	2021	√			
		102	Financial Management	2021	√		√	
		103	Business Environment and Policy	2021		√	√	
		104	Organisational Behaviour	2021	√		√	
		105a	Quantitative Techniques for Business	2021			√	
			Decisions					
		106a	Business Communication Skills	2021		√	√	
		201	Advanced cost Accounting	2021	√			
		202	Financial Markets and Services	2021	√		√	
		203	Strategic Financial Management	2021	√		√	
		204	Corporate Governance	2021	√	√		
		205a	Working Capital Management	2021	√	√		
		206a	e-Banking Operations	2021			√	
		301	Security Analysis and Portfolio Management	2021	√		√	
		302	Accounting for Managerial Decisions	2021	√		√	
		303a.	Tally with GST Application	2021	√		√	
		303c.	Tax planning & Management	2021	√		√	
		304	Internal Audit and Standard Audit Practices	2021	√		√	
		305a	Fundamentals of Accounting	2021			√	
		401	Financial Derivatives	2021			√	
		402	Project Planning & Control	2021	√		√	
		403a.	Insurance Management	2021	√		√	
		403d.	GST and Customs Duty	2021	√		√	
		405a	Security Market Operations	2021	√		√	

M.com(A&F)	101	Accounting Standards & Reporting	2021	√				
	102	Financial Management	2021	√		√		
	103	Business Environment and Policy	2021		√	√		
	104	Organisational Behaviour	2021	√		√		
	105a	Quantitative Techniques for Business	2021				√	
		Decisions						
	106a	Business Communication Skills	2021		√	√		
	201	Advanced cost Accounting	2021	√				
	202	Financial Markets and Services	2021	√		√		
	203	Strategic Financial Management	2021	√		√		
	204	Corporate Governance	2021	√	√			
	205a	Working Capital Management	2021	√	√			
	206a	e-Banking Operations	2021				√	
	301	Security Analysis and Portfolio Management	2021	√		√		
	302	Accounting for Managerial Decisions	2021	√		√		
	303a.	Tally with GST Application	2021	√		√		
	303c.	Tax planning & Management	2021	√		√		
	304	Internal Audit and Standard Audit Practices	2021	√		√		
	305a	Fundamentals of Accounting	2021				√	
	401	Financial Derivatives	2021				√	
402	Project Planning & Control	2021	√		√			
403a.	Insurance Management	2021	√		√			
403d.	GST and Customs Duty	2021	√		√			
405a	Security Market Operations	2021	√		√			
M.com(FM)	101	Accounting Standards & Reporting	2021	√				
	102	Financial Management	2021	√		√		
	103	Business Environment and Policy	2021		√	√		
	104	Organisational Behaviour	2021	√		√		
	105a	Quantitative Techniques for Business	2021				√	
		Decisions						
	106a	Business Communication Skills	2021		√	√		
	201	Advanced cost Accounting	2021	√				
	202	Financial Markets and Services	2021	√		√		
	203	Strategic Financial Management	2021	√		√		
	204	Corporate Governance	2021	√	√			
	205a	Working Capital Management	2021	√	√			
206a	e-Banking Operations	2021				√		

		301	Security Analysis and Portfolio Management	2021	√		√	
		302	Accounting for Managerial Decisions	2021	√		√	
		303a.	Tally with GST Application	2021	√		√	
		303c.	Tax planning & Management	2021	√		√	
		304	Internal Audit and Standard Audit Practices	2021	√		√	
		305a	Fundamentals of Accounting	2021			√	
		401	Financial Derivatives	2021			√	
		402	Project Planning & Control	2021	√		√	
		403a.	Insurance Management	2021	√		√	
		403d.	GST and Customs Duty	2021	√		√	
		405a	Security Market Operations	2021	√		√	
48	Pharmacy							
	B.Pharmacy							
		BP101T	Human Anatomy and Physiology I– Theory	2021	√			
		BP102T	Pharmaceutical Analysis I–Theory	2021	√			
		BP104T	Pharmaceutical Inorganic Chemistry–Theory	2021	√			
		BP105T	Communication skills– Theory	2021	√	√		
		BP106RBT	REMEDIAL BIOLOGY–Theory	2021	√			
		BP106RMT	Remedial Mathematics– Theory	2021	√			
		BP107P	Human Anatomy and Physiology – Practical	2021	√	√	√	
		BP108P	Pharmaceutical Analysis I – Practical	2021	√	√	√	
		BP109P	Pharmaceutics I – Practical	2021	√	√	√	
		BP110P	Pharmaceutical Inorganic Chemistry– Practical	2021	√	√	√	
		BP111P	Communication skills– Practical	2021	√	√	√	
		BP112RBP	Remedial biology – Practical	2021	√	√	√	
		BP 201T	Human Anatomy and Physiology-II – Theory	2021	√			
		BP202T	Pharmaceutical Organic Chemistry I – Theory	2021	√			
		BP203T	Biochemistry – Theory	2021	√			
		BP 204T	PATHOPHYSIOLOGYI–Theory	2021	√			
		BP205T	Computer Applications in Pharmacy – Theory	2021	√			
		BP206T	Environmental Science– Theory	2021	√			
		BP207P	Human Anatomy And Physiology II – (Practical)	2021	√	√	√	
		BP208P	Pharmaceutical Organic Chemistry I – Practical	2021	√	√	√	

BP209P	Biochemistry – Practical	2021	✓	✓	✓	
BP210P	Computer Applications in Pharmacy – Practical	2021	✓	✓	✓	
BP 301 T	Pharmaceutical organic chemistry II (Theory)	2021	✓			
BP 302 T	Physical Pharmaceutics I (Theory)	2021	✓			
BP 303 T	Pharmaceutical Microbiology (Theory)	2021	✓			
BP 304 T	Pharmaceutical Engineering (Theory)	2021	✓			
BP 305 P	Pharmaceutical organic chemistry II (Practical)	2021	✓	✓	✓	
BP 306 P	Physical Pharmaceutics I (Practical)	2021	✓	✓	✓	
BP 307 P	Pharmaceutical Microbiology (Practical)	2021	✓	✓	✓	
BP 308 P	Pharmaceutical Engineering (Practical)	2021	✓	✓	✓	
BP 401 T	Pharmaceutical organic chemistry III (Theory)	2021	✓			
BP 402 T	Medicinal chemistry I (Theory)	2021	✓			
BP 403 T	Physical Pharmaceutics II (Theory)	2021	✓			
BP 404 T	Pharmacology I (Theory)	2021	✓			
BP 405 T	PharmacognosyAndPhytochemistry I (Theory)	2021	✓			
BP 406 P	Medicinal chemistry I (Practical)	2021	✓	✓	✓	
BP 407 P	Physical pharmaceutics II (Practical)	2021	✓	✓	✓	
BP 408 P	Pharmacology I (Practical)	2021	✓	✓	✓	
BP 409 P	Pharmacognosy and Phytochemistry (Practical)	2021	✓	✓	✓	
BP501T	MEDICINAL CHEMISTRY – II- Theory	2021	✓			
BP502T.	Industrial Pharmacy-I- Theory	2021	✓			
BP503T.	Pharmacology-ii- theory	2021	✓			
BP504T.	Pharmacognosy and phytochemistry ii- theory	2021	✓			
BP505T	Pharmaceutical jurisprudence- theory	2021	✓			
BP506P.	Industrial pharmacy-i- practical	2021	✓	✓	✓	
BP507P	Pharmacology-II- Practical	2021	✓	✓	✓	
BP508P.	Pharmacognosy and phytochemistry ii - practical	2021	✓	✓	✓	
BP601T.	Medicinal chemistry – iii- theory	2021	✓			
BP602T.	Pharmacology-iii- theory	2021	✓			
BP603T.	Herbal drug technology- theory	2021	✓			
BP604T.	Biopharmaceutics and pharmacokinetics- theory	2021	✓			
BP605T.	Pharmaceutical biotechnology - theory	2021	✓			
BP606T.	Pharmaceutical quality assurance- theory	2021	✓			
BP607P.	Medicinal chemistry- iii- practical	2021	✓	✓	✓	
BP608 P.	Pharmacology-iii- practical	2021	✓	✓	✓	

BP609P.	Herbal drug technology-- practical	2021	✓	✓	✓	
BP701T	Instrumental Methods of Analysis (Theory)	2021	✓			
BP702T	Industrial pharmacy ii (theory)	2021	✓			
BP703T	Pharmacy practice (theory)	2021	✓			
BP704T	Novel drug delivery system (theory)	2021	✓			
BP705P	Instrumental Methods of Analysis (Practical)	2021	✓	✓	✓	
BP706PS	Practice school	2021	✓			
BP801T	Biostatistics and Research Methodology (Theory)	2021	✓			
BP802T	Social and Preventive Pharmacy (Theory)	2021	✓			
BPH 409	Biopharmaceutics & pharmacokinetics practicals	2021	✓	✓	✓	
BP803ET	Pharma marketing management (theory)	2021	✓			
BP804ET	Pharmaceutical regulatory science (theory)	2021	✓			
BP805ET	Pharmacovigilance (Theory)	2021	✓			
BP806ET	Quality Control and Standardization of Herbals (Theory)	2021	✓			
BP807ET	Computer aided drug design (theory)	2021	✓			
BP808ET	Cell and Molecular Biology (Theory)	2021	✓			
BP809ET	Physical pharmaceutics ii (theory)	2021	✓			
BP810ET	Pharmacology i (theory)	2021	✓			
BP811ET	Pharmacognosy and phytochemistry I (Theory)	2021	✓			
BP812ET	Medicinal chemistry I (Practical)	2021	✓	✓	✓	
BP813PW	Physical pharmaceutics II (Practical)	2021	✓	✓	✓	
M.Pharmacy						
Pharmacology						
MPH 101A(Pharmacology)	General & Systemic Pharmacology	2021	✓			
MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2021	✓			
MPH 103	Practical I	2021	✓	✓	✓	
MPH 104	Practical-II(MAT)	2021	✓	✓	✓	
MPH 105	Modern Analytical Techniques and biostatistics Theory	2021	✓			
MPH 106	Human Values and Professional Ethics-I	2021	✓			
MPH 107	Comprehensive Viva	2021	✓	✓	✓	
MPH 201A (Pharmacology)	Molecular Pharmacology	2021	✓			
MPH 202 A	Methods in Drug Evaluation	2021	✓			
MPH 203	Practical I	2021	✓	✓	✓	
MPH 204	Practical-II(BPK)	2021	✓	✓	✓	

		MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2021	✓			
		MPH 206	Human Values and Professional Ethics-II	2021	✓			
		MPH 207	Comprehensive Viva	2021	✓	✓	✓	
		MPH 301	Mid-Term Evaluation of Research project	2021	✓	✓	✓	
		MPH 401	Project thesis submission & presentation and Project Viva voce	2021	✓	✓	✓	
	Pharmaceutics							
	M.Pharmacy	MPH 101B	Advanced Pharmaceutical Technology	2021	✓			
		MPH 102B(PHARMACEUTICS)	Advanced Pharmaceutics	2021	✓			
		MPH 103	Practical-I(PHARMACEUTICS)	2021	✓	✓	✓	
		MPH 104	Practical-II(MAT)	2021	✓	✓	✓	
		MPH 105	Modern Analytical Techniques and biostatistics Theory	2021	✓			
		MPH 106	Human Values and Professional Ethics-I	2021	✓			
		MPH 107	Comprehensive Viva	2021	✓	✓	✓	
		MPH 201B	Industrial Pharmacy	2021	✓			
		(PHARMACEUTICS)						
		MPH202B(PHARMACEUTICS)	Process Validation & cGMP	2021	✓			
		MPH 203	Practical-I	2021	✓	✓	✓	
		MPH 204	Practical-II(BPT)	2021	✓	✓	✓	
		MPH 205	Bio-Pharmaceutics& Pharmacokinetics	2021	✓			
		MPH 206	Human Values and Professional Ethics-II	2021	✓			
		MPH 207	Comprehensive Viva	2021	✓	✓	✓	
		MPH 301	Mid-Term Evaluation of Research project	2021	✓	✓	✓	
		MPH 401	Project thesis submission & presentation and Project Viva voce	2021	✓	✓	✓	

1.1.3: Average percentage of courses having focus on employability/entrepreneurship/ skill development offered by the institution during the last five years

S.No	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	B.Tech (SEMESTER – I)	MAT01	Engg Mathematics – I	2016	✓		
2	B.Tech (SEMESTER – I)	CST01	Computer Programming	2016	✓		✓
3	B.Tech (SEMESTER – I)	PHT01	Engg. Physics	2016	✓		
4	B.Tech (SEMESTER – I)	CYT01	Engg Chemistry	2016	✓		
5	B.Tech (SEMESTER – I)	CET01	Environmental Studies	2016	✓	✓	
6	B.Tech (SEMESTER – I)	MET01	Engg Graphics	2016	✓		✓
7	B.Tech (SEMESTER – I)	CSP01	Programming Laboratory	2016			✓
8	B.Tech (SEMESTER – I)	MEP01	Workshop Practice	2016	✓		✓
9	B.Tech (SEMESTER – II)	MAT02	Engg Mathematics-II	2016	✓		

10	B.Tech (SEMESTER – II)	CST02	Data Structures	2016	✓		✓
11	B.Tech (SEMESTER – II)	EET43	Basics of Elec.&Electr.Engg	2016	✓		✓
12	B.Tech (SEMESTER – II)	CYT02	Physical Chemistry	2016	✓		
13	B.Tech (SEMESTER – II)	MET41	Mechanical Technology	2016	✓		✓
14	B.Tech (SEMESTER – II)	ENT01	English	2016	✓		✓
15	B.Tech (SEMESTER – II)	CSP02	Data Structures Laboratory	2016	✓		✓
16	B.Tech (SEMESTER – II)	ENP01	English Communication Lab	2016	✓		✓
17	B.Tech (SEMESTER – III)	MAT03	Engg Mathematics- III	2016	✓		
18	B.Tech (SEMESTER – III)	CET44	Mechanics of Solids	2016	✓		
19	B.Tech (SEMESTER – III)	CYT03	Organic Chemistry	2016	✓		
20	B.Tech (SEMESTER – III)	CHT01	Momentum Transfer	2016	✓		

21	B.Tech (SEMESTER – III)	CHT02	Chemical Process Calculations	2016	✓		
22	B.Tech (SEMESTER – III)	CHT03	Inorganic Chemical Technology	2016	✓	✓	
23	B.Tech (SEMESTER – III)	CHP01	Momentum Transfer Lab	2016			✓
24	B.Tech (SEMESTER – III)	CHP02	Chemical Analysis lab	2016	✓	✓	
25	B.Tech (SEMESTER – IV)	MAT04	Probability & Statistics	2016	✓		
26	B.Tech (SEMESTER – IV)	CHT04	Chem Engg Thermodynamics-I	2016	✓		
27	B.Tech (SEMESTER – IV)	CHT05	Mechanical Unit Operations	2016	✓	✓	
28	B.Tech (SEMESTER – IV)	CHT06	Industrial Effluent Treatment	2016	✓	✓	
29	B.Tech (SEMESTER – IV)	CHT07	Material Technology	2016	✓		
30	B.Tech (SEMESTER – IV)	CHT08	Organic Chemical Technology	2016	✓	✓	
31	B.Tech (SEMESTER – IV)	CHP03	Mechanical Unit Operations lab	2016	✓	✓	

32	B.Tech (SEMESTER – IV)	CHP04	Instrumental Analysis Lab	2016			✓
33	B.Tech (SEMESTER – IV)	CHS01	Seminar-I	2016			✓
34	B.Tech (SEMESTER – V)	MAT05	Numerical Methods for Chemical Engineering	2016	✓		
35	B.Tech	CHT09	Chem Engg	2016	✓		
36	B.Tech (SEMESTER – V)	CHT10	Heat Transfer	2016	✓		
37	B.Tech	CHT11	Mass Transfer	2016	✓	✓	
38	B.Tech (SEMESTER – V)	CHT12	Process Instrumentation	2016	✓	✓	
39	B.Tech (SEMESTER – V)	CHE01	Elective – I	2016			
40	B.Tech (SEMESTER – V)	CHP05	Heat Transfer Lab	2016			✓
41	B.Tech (SEMESTER – V)	CHP06	Computational Techniques lab	2016	✓		✓
42	B.Tech (SEMESTER – VI)	CHT13	Mass Transfer Operations-II	2016	✓		
43	B.Tech (SEMESTER – VI)	CHT14	Chemical Reaction Engg-I	2016	✓		

44	B.Tech (SEMESTER – VI)	CHT15	Process Dynamics & Control	2016	✓	✓	
45	B.Tech (SEMESTER – VI)	CHT16	Bioprocess Engineering	2016	✓		
46	B.Tech (SEMESTER – VI)		Open Elective -	2016			
47	B.Tech (SEMESTER – VI)	MET42	Industrial Management	2016	✓	✓	
48	B.Tech (SEMESTER – VI)	CHP07	Mass Transfer Operations Lab-I	2016	✓	✓	
49	B.Tech (SEMESTER – VI)	CHP08	Process Dynamics & Control Lab	2016	✓	✓	
50	B.Tech (SEMESTER – VII)	CHT17	Chem. Reaction Engineering-II	2016	✓	✓	
51	B.Tech (SEMESTER – VII)	CHT18	Transport Phenomena	2016		✓	
52	B.Tech (SEMESTER – VII)	CHT19	Plant Design & Proc. Economics	2016	✓	✓	
53	B.Tech (SEMESTER – VII)	CHT20	Process Modeling & Simulation	2016	✓	✓	
54	B.Tech (SEMESTER – VII)	CHT21	Engineering Ethics	2016			✓

55	B.Tech (SEMESTER – VII)	CHE02	Elective-II	2016			
56	B.Tech (SEMESTER – VII)	CHP09	Mass Transfer Operations Lab-II	2016	✓	✓	
57	B.Tech (SEMESTER – VII)	CHP10	Chem Reaction Engg Lab	2016	✓	✓	
58	B.Tech (SEMESTER – VIII)	CHT22	Optimization Techniques	2016			✓
59	B.Tech (SEMESTER – VIII)	CHE 03	Elective-III	2016			
60	B.Tech (SEMESTER – VIII)	CHT24	Computer Aided Process Equipment Design & Drawing	2016	✓	✓	✓
61	B.Tech (SEMESTER – VII)	CHP11	Project Work	2016	✓		✓
62	B.Tech (SEMESTER – VIII)	CHP12	Internship/Mini Project	2016	✓		✓
63	B.Tech (SEMESTER – VIII)		MOOCs	2016			✓

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MAT01	Engg Mathematics – I	2016	49/ 63 = 77.77%
2	CST01	Computer Programming	2016	
3	PHT01	Engg. Physics	2016	
4	CYT01	Engg Chemistry	2016	
5	CET01	Environmental Studies	2016	
6	MET01	Engg Graphics	2016	
7	MEP01	Workshop Practice	2016	
8	MAT02	Engg Mathematics-II	2016	
9	CST02	Data Structures	2016	
10	EET43	Basics of Elec.&Electr.Engg	2016	
11	CYT02	Physical Chemistry	2016	
12	MET41	Mechanical Technology	2016	
13	ENT01	English	2016	
14	CSP02	Data Structures Laboratory	2016	
15	ENP01	English Communication Lab	2016	

16	MAT03	Engg Mathematics-III	2016
17	CET44	Mechanics of Solids	2016
18	CYT03	Organic Chemistry	2016
19	CHT01	Momentum Transfer	2016
20	CHT03	Inorganic Chemical Technology	2016
21	CHP02	Chemical Analysis lab	2016
22	MAT04	Probability & Statistics	2016
23	CHT04	Chem Engg Thermodynamics-I	2016
24	CHT05	Mechanical Unit Operations	2016
25	CHT06	Industrial Effluent Treatment	2016
26	CHT07	Material Technology	2016
27	CHT08	Organic Chemical Technology	2016
28	CHP03	Mechanical Unit Operations lab	2016
29	MAT05	Numerical Methods for Chemical Engineering	2016
30	CHT09	Chem Engg Thermodynamics-II	2016

31	CHT10	Heat Transfer	2016
32	CHT11	Mass Transfer Operations-I	2016
33	CHT12	Process Instrumentation	2016
34	CHP06	Computational Techniques lab	2016
35	CHT13	Mass Transfer Operations-II	2016
36	CHT14	Chemical Reaction Engg-I	2016
37	CHT15	Process Dynamics & Control	2016
38	CHT16	Bioprocess Engineering	2016
39	MET42	Industrial Management	2016
40	CHP07	Mass Transfer Operations Lab-I	2016
41	CHP08	Process Dynamics & Control Lab	2016
42	CHT17	Chem. Reaction Engineering-II	2016
43	CHT19	Plant Design & Proc. Economics	2016
44	CHT20	Process Modeling & Simulation	2016
45	CHP09	Mass Transfer Operations Lab-II	2016
46	CHP10	Chem Reaction Engg Lab	2016

47	CHT24	Computer Aided Process Equipment Design & Drawing	2016	
48	CHP11	Project Work	2016	
49	CHP12	Internship/Mini Project	2016	
S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CET01	Environmental Studies	2016	
2	CHT03	Inorganic Chemical Technology	2016	
3	CHP02	Chemical Analysis lab	2016	
4	CHT05	Mechanical Unit Operations	2016	
5	CHT06	Industrial Effluent Treatment	2016	
6	CHT08	Organic Chemical Technology	2016	
7	CHP03	Mechanical Unit Operations lab	2016	
8	CHT11	Mass Transfer Operations-I	2016	
9	CHT12	Process Instrumentation	2016	20/63 = 31.75%

10	CHT15	Process Dynamics & Control	2016	
11	MET42	Industrial Management	2016	
12	CHP07	Mass Transfer Operations Lab-I	2016	
13	CHP08	Process Dynamics & Control Lab	2016	
14	CHT17	Chem. Reaction Engineering-II	2016	
15	CHT19	Plant Design & Proc. Economics	2016	
16	CHT20	Process Modeling & Simulation	2016	
17	CHP09	Mass Transfer Operations Lab-II	2016	
18	CHP10	Chem Reaction Engg Lab	2016	
19	CHT24	Computer Aided Process Equipment Design & Drawing	2016	
20	CHT18	Transport Phenomena	2016	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill Development during the last five years
1	CST01	Computer	2016	

1	CST01	Programming	2016	20/63 = 31.75%
2	MET01	Engg Graphics	2016	
3	CSP01	Programming Laboratory	2016	
4	MEP01	Workshop Practice	2016	
5	CST02	Data Structures	2016	
6	EET43	Basics of Elec.&Electr.Engg	2016	
7	MET41	Mechanical Technology	2016	
8	ENT01	English	2016	
9	CSP02	Data Structures Laboratory	2016	
10	ENP01	English Communication Lab	2016	
11	CHP04	Instrumental Analysis Lab	2016	
12	CHS01	Seminar-I	2016	
13	CHP05	Heat Transfer Lab	2016	
14	CHP06	Computational Techniques lab	2016	
15	CHT21	Engineering Ethics	2016	
16	CHT22	Optimization Techniques	2016	
17	CHT24	Computer Aided Process Equipment Design & Drawing	2016	
18	CHP11	Project Work	2016	

19	CHP12	Internship/Mini Project	2016
20		MOOCs	2016

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S.No	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	B.Tech (SEMESTER – I)	MABST 101	Mathematics – I	2018	✓		
2	B.Tech (SEMESTER – I)	CHBST 102	Chemistry for Chemical Engineering - I	2018	✓		
3	B.Tech (SEMESTER – I)	ENHST 103	English	2018	✓		✓
4	B.Tech (SEMESTER – I)	EEEST104	Basics of Electrical & Electronics Engineering	2018	✓		✓
5	B.Tech (SEMESTER – I)	MEEEST 105	Engineering Graphics and Design	2018	✓		✓
6	B.Tech (SEMESTER – I)	ENHSP 106	English Communication Lab	2018	✓		✓
7	B.Tech (SEMESTER – II)	MABST 201	Mathematics-II	2018	✓		
8	B.Tech (SEMESTER – II)	PYBST 202	Engineering Physics	2018	✓		

9	B.Tech (SEMESTER – II)	CSEST 203	Programming for Problem Solving	2018			✓
10	B.Tech (SEMESTER – II)	CHBST 204	Chemistry for Chemical Engineering - II	2018	✓		
11	B.Tech (SEMESTER – II)	MEESP 205	Workshop / Manufacturing Practice	2018	✓		✓
12	B.Tech (SEMESTER – II)	CSESP 206	Programming for Problem Solving Lab	2018			✓
13	B.Tech (SEMESTER – II)	CEMCT 207	Environmental Science	2018	✓	✓	
14	B.Tech (SEMESTER – III)	MABST 301	Mathematics – III	2018	✓		
15	B.Tech (SEMESTER – III)	CEEST 302	Engineering & Solid Mechanics	2018	✓		
16	B.Tech (SEMESTER – III)	CHPCT 303	Chemical Process Calculations	2018	✓		
17	B.Tech (SEMESTER – III)	CHPCT 304	Momentum Transfer	2018	✓		
18	B.Tech (SEMESTER – III)	CHPCT 305	Mechanical Unit Operations	2018	✓	✓	
19	B.Tech (SEMESTER – III)	CHPCP306	Fluid and Particle Mechanics Lab	2018	✓	✓	

20	B.Tech (SEMESTER – III)	CHPCP 307	Analysis Lab	2018	✓	✓	
21	B.Tech (SEMESTER – IV)	PAMCT 401	Constitution of India	2018			✓
22	B.Tech (SEMESTER – IV)	MABST 402	Probability & Statistics	2018	✓		
23	B.Tech (SEMESTER – IV)	CHPCT 403	Chemical Engineering Thermodynamics – I	2018	✓		
24	B.Tech (SEMESTER – IV)	CHPCT 404	Heat transfer	2018	✓		
25	B.Tech (SEMESTER – IV)	CHPCT 405	Mass Transfer – I	2018	✓	✓	
26	B.Tech (SEMESTER – IV)	CHPCT 406	Chemical Technology	2018	✓	✓	
27	B.Tech (SEMESTER – IV)	CHBST 407	Fundamentals of Bio technology	2018	✓		
28	B.Tech (SEMESTER – IV)	CHPCP408	Heat Transfer Lab	2018			✓
29	B.Tech (SEMESTER – V)	MABST 501	Numerical Methods in Chemical Engg.	2018	✓		
30	B.Tech (SEMESTER – V)	CHPCT 502	Chemical Engineering Thermodynamics	2018	✓		
					✓		

31	B.Tech (SEMESTER – V)	CHPCT 503	Mass Transfer – II	2018	✓	✓	
32	B.Tech (SEMESTER – V)	CHPCT 504	Chemical Reaction Engineering – I	2018	✓		
33	B.Tech (SEMESTER – V)		Program Elective- I	2018			
34	B.Tech (SEMESTER – V)	CHPCP507	Mass Transfer Lab	2018	✓	✓	
35	B.Tech (SEMESTER – V)	CHPCP 508	Computational Techniques Lab	2018	✓		✓
36	B.Tech (SEMESTER – V)		Open Elective - MOOCS	2018			✓
36	B.Tech (SEMESTER – VI)	CHPCT 601	Chemical Reaction Engineering - II	2018	✓	✓	
37	B.Tech (SEMESTER – VI)	CHPCT602	Transport Phenomena	2018		✓	
38	B.Tech (SEMESTER – VI)	CHPCT603	Process Dynamics & Control	2018	✓	✓	
39	B.Tech (SEMESTER – VI)	MEHST604	Industrial Management	2018	✓		
40	B.Tech (SEMESTER – VI)		Program Elective – II	2018			

41	B.Tech (SEMESTER – VI)	CHOET606	Open Elective- I	2018			
42	B.Tech (SEMESTER – VI)	CHPCP 607	Reaction Engineering Lab	2018	✓	✓	
43	B.Tech (SEMESTER – VI)	CHPCP 608	Process Dynamics & Control Lab	2018	✓	✓	
44	B.Tech (SEMESTER – VII)	CHPCT701	Plant Design & Process Economics	2018	✓	✓	
45	B.Tech (SEMESTER – VII)		Program Elective – III	2018			
46	B.Tech (SEMESTER – VII)	CHOET 703	Open Elective – II	2018			
47	B.Tech (SEMESTER – VII)	CHHST 704	Engineering Ethics	2018			✓
48	B.Tech (SEMESTER – VII)	CHPCP 705	Process Equipment Design & Drawing	2018	✓	✓	✓
49	B.Tech (SEMESTER – VII)	CHPCP 706	Simulation Lab	2018	✓		
50	B.Tech (SEMESTER – VII)	CHPCI 707	Industry Internship	2018	✓		✓
51	B.Tech (SEMESTER – VII)	CHPCW 708	Project Work – Phase I	2018	✓		✓

52	B.Tech (SEMESTER – VIII)		(Program Elective-IV) Petroleum Refining Processes	2018			
53	B.Tech (SEMESTER – VIII)	CHOET 802	Open Elective – III	2018			
54	B.Tech (SEMESTER – VIII)	CHPCW801	Project Work - Phase II	2018	✓		✓

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MABST 101	Mathematics – I	2018	54 / 42 = 77.77 %
2	CHBST 102	Chemistry for Chemical Engineering - I	2018	
3	ENHST 103	English	2018	
4	EEEST104	Basics of Electrical & Electronics Engineering	2018	
5	MEEST 105	Engineering Graphics and Design	2018	
6	ENHSP 106	English Communication Lab	2018	
7	MABST 201	Mathematics-II	2018	

8	PYBST 202	Engineering Physics	2018
9	CHBST 204	Chemistry for Chemical Engineering - II	2018
10	MEESP 205	Workshop / Manufacturing Practice	2018
11	CEMCT 207	Environmental Science	2018
12	MABST 301	Mathematics – III	2018
13	CEEST 302	Engineering & Solid Mechanics	2018
14	CHPCT 303	Chemical Process Calculations	2018
15	CHPCT 304	Momentum Transfer	2018
16	CHPCT 305	Mechanical Unit Operations	2018
17	CHPCP306	Fluid and Particle Mechanics Lab	2018
18	CHPCP 307	Analysis Lab	2018
19	MABST 402	Probability & Statistics	2018
20	CHPCT 403	Chemical Engineering Thermodynamics – I	2018
21	CHPCT 404	Heat transfer	2018
22	CHPCT 405	Mass Transfer – I	2018
23	CHPCT 406	Chemical Technology	2018

24	CHBST 407	Fundamentals of Bio technology	2018
25	CHPCP408	Heat Transfer Lab	2018
26	MABST 501	Numerical Methods in Chemical Engg.	2018
27	CHPCT 502	Chemical Engineering Thermodynamics – II	2018
28	CHPCT 503	Mass Transfer – II	2018
29	CHPCT 504	Chemical Reaction Engineering – I	2018
30	CHPCP507	Mass Transfer Lab	2018
31	CHPCP 508	Computational Techniques Lab	2018
32	CHPCT 601	Chemical Reaction Engineering - II	2018
33	CHPCT603	Process Dynamics & Control	2018
34	MEHST604	Industrial Management	2018
35	CHPCP 607	Reaction Engineering Lab	2018
36	CHPCP 608	Process Dynamics & Control Lab	2018
37	CHPCT701	Plant Design & Process Economics	2018

38	CHPCP 705	Process Equipment Design & Drawing	2018
39	CHPCP 706	Simulation Lab	2018
40	CHPCI 707	Industry Internship	2018
41	CHPCW 708	Project Work – Phase I	2018
42	CHPCW801	Project Work - Phase II	2018

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CEMCT 207	Environmental Science	2018	13 / 54 = 24.07%
2	CHPCT 305	Mechanical Unit Operations	2018	
3	CHPCP306	Fluid and Particle Mechanics Lab	2018	
4	CHPCP 307	Analysis Lab	2018	
5	CHPCT 405	Mass Transfer – I	2018	
6	CHPCT 406	Chemical Technology	2018	
7	CHPCT 503	Mass Transfer – II	2018	
8	CHPCP507	Mass Transfer Lab	2018	

9	CHPCT 601	Chemical Reaction Engineering - II	2018	
10	CHPCT602	Transport Phenomena	2018	
11	CHPCT603	Process Dynamics & Control	2018	
12	CHPCT701	Plant Design & Process Economics	2018	
13	CHPCP 705	Process Equipment Design & Drawing	2018	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill Development during the last five years
1	ENHST 103	English	2018	
2	EEEST104	Basics of Electrical & Electronics Engineering	2018	
3	MEEST 105	Engineering Graphics and Design	2018	
4	ENHSP 106	English Communication Lab	2018	
5	CSEST 203	Programming for Problem Solving	2018	

6	MEESP 205	Workshop / Manufacturing Practice	2018	16 / 54 = 29.63%
7	CSESP 206	Programming for Problem Solving Lab	2018	
8	PAMCT 401	Constitution of India	2018	
9	CHPCP408	Heat Transfer Lab	2018	
10	CHPCP 508	Computational Techniques Lab	2018	
11		Open Elective - MOOCS	2018	
12	CHHST 704	Engineering Ethics	2018	
13	CHPCP 705	Process Equipment Design & Drawing	2018	
14	CHPCI 707	Industry Internship	2018	
15	CHPCW 708	Project Work – Phase I	2018	
16	CHPCW801	Project Work - Phase II	2018	

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S.No	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	B.Tech (SEMESTER – I)	MABST 101	Mathematics – I	2020	✓		

2	B.Tech (SEMESTER – I)	CHBST 102	Chemistry for Chemical Engineering - I	2020	✓		
3	B.Tech (SEMESTER – I)	ENHST 103	English	2020	✓		✓
4	B.Tech (SEMESTER – I)	EEEST104	Basics of Electrical & Electronics Engineering	2020	✓		✓
5	B.Tech (SEMESTER – I)	MEEST 105	Engineering Graphics and Design	2020	✓		✓
6	B.Tech (SEMESTER – I)	ENHSP 106	English Communication Lab	2020	✓		✓
7	B.Tech (SEMESTER – II)	MABST 201	Mathematics-II	2020	✓		
8	B.Tech (SEMESTER – II)	PYBST 202	Engineering Physics	2020	✓		
9	B.Tech (SEMESTER – II)	CSEST 203	Programming for Problem Solving	2020			✓
10	B.Tech (SEMESTER – II)	CHBST 204	Chemistry for Chemical Engineering - II	2020	✓		
11	B.Tech (SEMESTER – II)	MEEESP 205	Workshop / Manufacturing Practice	2020	✓		✓

12	B.Tech (SEMESTER – II)	CSESP 206	Programming for Problem Solving Lab	2020			✓
13	B.Tech (SEMESTER – II)	CEMCT 207	Environmental Science	2020	✓	✓	
14	B.Tech(SEMESTE R-III))	MA301BMA301 B	Mathematics - III	2020	✓		
15	B.Tech(SEMESTE R-III))	CE302CCH302E	Engineering and Solid Mechanics	2020	✓		✓
16	B.Tech(SEMESTE R-III))	HS303C	Managerial Economics and Accountancy	2020	✓		✓
17	B.Tech(SEMESTE R-III))	CH304C	Chemical Process Calculations	2020	✓		
18	B.Tech(SEMESTE R-III))	CH305C	Momentum Transfer	2020	✓		
19	B.Tech(SEMESTE R-III))	CH306C	Chemical Engineering Thermodynamics - I	2020	✓		
20	B.Tech(SEMESTE R-III))	CH307L	Momentum Transfer Lab	2020			✓
21	B.Tech(SEMESTE R-III))	CH308L	Analysis Lab	2020	✓	✓	
22	B.Tech(SEMESTE R-III))	CH309S	Computer Skills	2020	✓		✓
23	B.Tech(SEMESTE R-III))	MC310A	Constitution of India	2020			✓
24	B.Tech(SEMESTE R-IV))	MA301BCH401B	Mathematics - IV	2020	✓		✓
25	B.Tech(SEMESTE R-IV)	CE302CCH402C	Particle and Fluid Processing	2020	✓	✓	

26	B.Tech(SEMESTER-IV)	CH403C	Chemical Engineering Thermodynamics - II	2020	✓		
27	B.Tech(SEMESTER-IV)	CH404C	Heat Transfer	2020	✓		
28	B.Tech(SEMESTER-IV)	CH405C	Mass Transfer Operations - I	2020	✓	✓	
29	B.Tech(SEMESTER-IV)	CH406C	Chemical Technology	2020	✓	✓	
30	B.Tech(SEMESTER-IV)	CH407L	Particle and Fluid Processing Lab	2020	✓	✓	
31	B.Tech(SEMESTER-IV)	CH408L	Heat Transfer Lab	2020	✓		✓
32	B.Tech(SEMESTER-IV)	CH409S	Python ProgrammingPython Programming	2020	✓		✓

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MABST 101	Mathematics – I	2020	
2	CHBST 102	Chemistry for Chemical Engineering - I	2020	
3	ENHST 103	English	2020	

4	EEEST104	Basics of Electrical & Electronics Engineering	2020	29 /32 = 90.63 %
5	MEEEST 105	Engineering Graphics and Design	2020	
6	ENHSP 106	English Communication Lab	2020	
7	MABST 201	Mathematics-II	2020	
8	PYBST 202	Engineering Physics	2020	
9	CHBST 204	Chemistry for Chemical Engineering - II	2020	
10	MEESP 205	Workshop / Manufacturing Practice	2020	
11	CEMCT 207	Environmental Science	2020	
12	MA301BMA301 B	Mathematics - III	2020	
13	CE302CCH302E	Engineering and Solid Mechanics	2020	
14	HS303C	Managerial Economics and Accountancy	2020	
15	CH304C	Chemical Process Calculations	2020	
16	CH305C	Momentum Transfer	2020	

17	CH306C	Chemical Engineering Thermodynamics - I	2020
18	CH308L	Analysis Lab	2020
19	CH309S	Computer Skills	2020
20	MC310A	Constitution of India	2020
21	MA301BCH401B	Mathematics - IV	2020
22	CE302CCH402C	Particle and Fluid Processing	2020
23	CH403C	Chemical Engineering Thermodynamics - II	2020
24	CH404C	Heat Transfer	2020
25	CH405C	Mass Transfer Operations - I	2020
26	CH406C	Chemical Technology	2020
27	CH407L	Particle and Fluid Processing Lab	2020
28	CH408L	Heat Transfer Lab	2020
29	CH409S	Python ProgrammingPython Programming	2020

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CEMCT 207	Environmental Science	2020	6/ 32 = 18.75%
2	CH308L	Analysis Lab	2020	
3	CE302CCH402C	Particle and Fluid Processing	2020	
4	CH405C	Mass Transfer Operations - I	2020	
5	CH406C	Chemical Technology	2020	
6	CH407L	Particle and Fluid Processing Lab	2020	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill Development during the last five years
1	ENHST 103	English	2020	
2	EEEST104	Basics of Electrical & Electronics Engineering	2020	

3	MEEST 105	Engineering Graphics and Design	2020	15 /32 = 46.87 %
4	ENHSP 106	English Communication Lab	2020	
5	CSEST 203	Programming for Problem Solving	2020	
6	MEESP 205	Workshop / Manufacturing Practice	2020	
7	CSESP 206	Programming for Problem Solving Lab	2020	
8	CE302CCH302E	Engineering and Solid Mechanics	2020	
9	HS303C	Managerial Economics and Accountancy	2020	
10	CH307L	Momentum Transfer Lab	2020	
11	CH309S	Computer Skills	2020	
12	MC310A	Constitution of India	2020	
13	MA301BCH401B	Mathematics - IV	2020	
14	CH408L	Heat Transfer Lab	2020	
15	CH409S	Python ProgrammingPython Programming	2020	

Civil Engineering

S. No.	Name of the Programme	Course Code	Title of the Course	Year of Introduction	Employability	Entrepreneurship	Skill development
1	B.Tech	MAT01	Engineering Mathematics – I	2016	√		
2		MET01	Engineering Graphics	2016	√		
3		MEP01	Workshop Practice	2016	√		
4		CSP01	Computer Programming Lab	2016			√
5		MEP01	Workshop Practice	2016			√
6		MAT02	Engineering Mathematics – II	2017	√		
7		CET03	Branch Subject	2017	√		
8		ENT01	English	2017	√		
9		CET04	Engineering Mechanics	2017	√		
10		CET05	Engineering Geology	2017	√		
11		CET06	Fluid Mechanics And Hydraulic Machines	2017	√		
12		CET07	Surveying	2017	√		
13		CEP01	Surveying Laboratory	2017		√	
14		ENP01	English Communication Lab	2017			√
15		CEP01	Surveying Laboratory	2017			√
16		CET08	Mechanics of Solids	2018	√		
17		CET09	Applied Hydraulics	2018	√		
18		CET10	Soil Mechanics	2018	√		
19		CET11	Structural Analysis-I	2018	√		
20		CET12	Environmental Engineering-I	2018	√		
21		CET13	Building Planning, Design and Drawing	2018	√		
22		CET14	Hydrology	2018	√		
23		CET15	Foundation Engineering-I	2018	√		
24		CET16	Design of R.C.C Structures	2018	√		
25		CET17	Elective-I	2018	√		
26		CET17-E3	Construction Technology	2018	√		
27		CET19	Structural Analysis-II	2018	√		
28		CEP03	Fluid Mechanics And Hydraulic Machinery Laboratory	2018		√	
29		CEP04	Material Testing Laboratory	2018		√	
30		CEP05	Geotechnical Engineering Laboratory	2018		√	
31		CEP06	Environmental Engineering Laboratory	2018		√	
32		CEP07	Survey Camp	2018		√	
33		CEP03	Fluid Mechanics And Hydraulic Machinery Laboratory	2018			√
34		CEP04	Material Testing Laboratory	2018			√
35		CEP05	Geotechnical Engineering Laboratory	2018			√
36		CEP06	Environmental Engineering Laboratory	2018			√
37		CEP07	Survey Camp	2018			√
38		CET20	Transportation Engineering	2019	√		
39		CET21	Environmental Engineering-II	2019	√		
40		CET22	Elective-2(Open Elective)	2019	√		
41		CET22-OE1	Green Technology	2019	√		

42		CET23	Quantity Surveying and Valuation	2019	√		
43		CET24	Foundation Engineering-II	2019	√		
44		CEP09	Technical Seminar & Presentation Skills	2019	√		
45		CET25	Remote Sensing And GIS	2019	√		
46		CET26	Structural Dynamics And Design of Earthquake Resistance Structures	2019	√		
47		CET27	Irrigation & Hydraulic Structures	2019	√		
48		CET28	Elective-III	2019	√		
49		CET28-E4	Concrete Dams	2019	√		
50		CET29	Professional Ethics	2019	√		
51		MAT04	Numerical Methods	2019	√		
52		CEP08	Transportation Engineering Laboratory	2019		√	
53		CEP10	Concrete Technology Laboratory	2019		√	
54		CEP11	CAD Laboratory	2019		√	
55		CEP08	Transportation Engineering Laboratory	2019			√
56		CEP09	Technical Seminar & Presentation Skills	2019			√
57		CEP10	Concrete Technology Laboratory	2019			√
58		CEP11	CAD Laboratory	2019			√
59		CET31	Construction Planning and Project Management	2020	√		
60		CEP14	GIS Lab	2020		√	
61		CEP12	Project Work	2020		√	
62		CEP14	GIS Lab	2020			√

focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MAT01	Engineering Mathematics – I	2016	37/62= 58.73%
2	MET01	Engineering Graphics	2016	
3	MEP01	Workshop Practice	2016	
4	MAT02	Engineering Mathematics – II	2017	
5	CET03	Branch Subject	2017	
6	ENT01	English	2017	
7	CET04	Engineering Mechanics	2017	
8	CET05	Engineering Geology	2017	
9	CET06	Fluid Mechanics And Hydraulic Machines	2017	
10	CET07	Surveying	2017	
11	CET08	Mechanics of Solids	2018	
12	CET09	Applied Hydraulics	2018	
13	CET10	Soil Mechanics	2018	
14	CET11	Structural Analysis-I	2018	
15	CET12	Environmental Engineering-I	2018	
16	CET13	Building Planning, Design and Drawing	2018	
17	CET14	Hydrology	2018	
18	CET15	Foundation Engineering-I	2018	
19	CET16	Design of R.C.C Structures	2018	
20	CET17	Elective-I	2018	
21	CET17-E3	Construction Technology	2018	
22	CET19	Structural Analysis-II	2018	
23	CET20	Transportation Engineering	2019	
24	CET21	Environmental Engineering-II	2019	

25	CET22	Elective-2(Open Elective)	2019
26	CET22-OE1	Green Technology	2019
27	CET23	Quantity Surveying and Valuation	2019
28	CET24	Foundation Engineering-II	2019
29	CEP09	Technical Seminar & Presentation Skills	2019
30	CET25	Remote Sensing And GIS	2019
31	CET26	Structural Dynamics And Design of Earthquake Resistance Structures	2019
32	CET27	Irrigation & Hydraulic Structures	2019
33	CET28	Elective-III	2019
34	CET28-E4	Concrete Dams	2019
35	CET29	Professional Ethics	2019
36	MAT04	Numerical Methods	2019
37	CET31	Construction Planning and Project Management	2020

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CEP01	Surveying Laboratory	2017	11/62=17.18%
2	CEP03	Fluid Mechanics And Hydraulic Machinery Laboratory	2018	
3	CEP04	Material Testing Laboratory	2018	
4	CEP05	Geotechnical Engineering Laboratory	2018	
5	CEP06	Environmental Engineering Laboratory	2018	
6	CEP07	Survey Camp	2018	
7	CEP08	Transportation Engineering Laboratory	2019	
8	CEP10	Concrete Technology Laboratory	2019	
9	CEP11	CAD Laboratory	2019	
10	CEP14	GIS Lab	2020	
11	CEP12	Project Work	2020	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	CSP01	Computer Programming Lab	2016	14/62= 21.87%
2	MEP01	Workshop Practice	2016	
3	ENP01	English Communication Lab	2017	
4	CEP01	Surveying Laboratory	2017	
5	CEP03	Fluid Mechanics And Hydraulic Machinery Laboratory	2018	
6	CEP04	Material Testing Laboratory	2018	
7	CEP05	Geotechnical Engineering Laboratory	2018	
8	CEP06	Environmental Engineering Laboratory	2018	
9	CEP07	Survey Camp	2018	
10	CEP08	Transportation Engineering Laboratory	2019	
11	CEP09	Technical Seminar & Presentation Skills	2019	
12	CEP10	Concrete Technology Laboratory	2019	
13	CEP11	CAD Laboratory	2019	
14	CEP14	GIS Lab	2020	

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Ability/ Entrepreneurship/ Skill development – Mapping

S. No.	Name of the Programme	Course Code	Title of the Course	Year of Introduction	Employability	Entrepreneurship	Skill development
1	B.Tech	MABST 101	Mathematics – I	2018	√		
2		ENHST 103	English	2018	√		
3		ENHSP 106	English Communication Lab	2018	√		

4		ENHSP 106	English Communication Lab	2018			√
5		MEEST 105	Engineering Graphics & Design	2018			√
6		MABST 201	Mathematics – II	2019	√		
7		CSEST 203	Programming for Problem solving	2019	√		
8		CEEST 204	Engineering Mechanics	2019	√		
9		MEESP 205	Workshop/Manufacturing Practices	2019	√		
10		CSESP 206	Computer Programming Lab	2019	√		
11		CEMCT 207	Environmental Science	2019	√		
12		CSEST 203	Programming for Problem solving	2019			√
13		CSESP 206	Computer Programming Lab	2019			√
14		MEESP 205	Workshop/Manufacturing Practices	2019			√
15		CSESP 206	Computer Programming Lab	2019			√
16		MABST 301	Mathematics – III	2019	√		
17		CEPCT 302	Strength of Materials	2019	√		
18		CEPCT 303	Surveying	2019	√		
19		CEPCT 304	Building Materials and Construction Technology	2019	√		
20		MEEST 305	Basic Mechanical Engineering	2019	√		
21		CEPCT 306	Engineering Geology	2019	√		
22		CEPCP 307	Surveying Lab	2019	√		
23		CEPCP 308	Engineering Geology Lab	2019	√		
24		CEPCT 303	Surveying	2019		√	
25		CEPCP 307	Surveying Lab	2019		√	
26		CEPCT 304	Building Materials and Construction Technology	2019		√	
27		CEPCT 303	Surveying	2019			√
28		CEPCP 307	Surveying Lab	2019			√
29		MABST 402	Mathematics – IV	2020	√		
30		CEPCT 403	Fluid Mechanics and Hydraulic Machines	2020	√		
31		CEPCT 404	Structural Analysis	2020	√		
32		CEPCT 405	Environmental Engineering	2020	√		
33		CEPCT 406	Soil Mechanics	2020	√		
34		CEPCD 407	Computer aided Building Drawing	2020	√		
35		CEPCP 408	Fluid Mechanics and Hydraulic Machines Lab	2020	√		
36		CEESP 409	Materials Testing Lab	2020	√		
37		CEESP 409	Materials Testing Lab	2020		√	
38		CEPCT 406	Soil Mechanics	2020		√	
39		CEPCT 404	Structural Analysis	2020		√	
40		PAMCT 401	Constitution of India	2020			√
41		CEPCD 407	Computer aided Building Drawing	2020			√
42		CEESP 409	Materials Testing Lab	2020			√
43		CEPCT 501	Hydraulic Engineering	2020	√		

44		CEPET 502	Advanced Environmental Engineering	2020	√		
45		CEPCT 503	Foundation Engineering	2020	√		
46		CEPET 504	Remote Sensing And GIS	2020	√		
47		CEPCT 505	Reinforced Concrete Design	2020	√		
48		CEPCT 506	Design of Steel Structures	2020	√		
49		CEPCP 507	Hydraulic Engineering Lab	2020	√		
50		CEPCP 508	Soil Mechanics Lab	2020	√		
51		CEPCP 508	Soil Mechanics Lab	2020		√	
52		CEPCT 503	Foundation Engineering	2020		√	
53		CEPCT 505	Reinforced Concrete Design	2020		√	
54		CEPCT 506	Design of Steel Structures	2020		√	
55		CEPET 504	Remote Sensing And GIS	2020			√
56		CEPCT 601	Hydrology and Water Resources Engineering	2021	√		
57		CEPCT 602	Transportation Engineering	2021	√		
58		CEOET 603-PE3	Concrete Technology	2021	√		
59		CEPET 604-PE4	Advanced Foundation Engineering	2021	√		
60		CEPCP 606	Environmental Engineering Lab	2021	√		
61		CEPCP 607	Transportation Engineering Lab	2021	√		
62		CEPET 604	Advanced Foundation Engineering	2021		√	
63		CEOET 603	Concrete Technology	2021		√	
64		MGHST 608	Management(Organizational Behaviour)	2021			√
65		CEPCT 701	Estimation & Costing	2021	√		
66		CEPET 703-PE5	Watershed Management	2021	√		
67		CEPCI 705	Industry Internship	2021	√		
68		CEPCX 706	Project Work - Phase I	2021	√		
69		CEPCT 701	Estimation & Costing	2021		√	
70		CEPCI 705	Industry Internship	2021			√

focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MABST 101	Mathematics – I	2018	45/54= 83.3%
2	ENHST 103	English	2018	
3	ENHSP 106	English Communication Lab	2018	
4	MABST 201	Mathematics – II	2019	
5	CSEST 203	Programming for Problem solving	2019	
6	CEEST 204	Engineering Mechanics	2019	
7	MEESP 205	Workshop/Manufacturing Practices	2019	
8	CSESP 206	Computer Programming Lab	2019	
9	CEMCT 207	Environmental Science	2019	
10	MABST 301	Mathematics – III	2019	
11	CEPCT 302	Strength of Materials	2019	
12	CEPCT 303	Surveying	2019	
13	CEPCT 304	Building Materials and Construction Technology	2019	
14	MEEST 305	Basic Mechanical Engineering	2019	
15	CEPCT 306	Engineering Geology	2019	
16	CEPCP 307	Surveying Lab	2019	

17	CEPCP 308	Engineering Geology Lab	2019
18	MABST 402	Mathematics – IV	2020
19	CEPCT 403	Fluid Mechanics and Hydraulic Machines	2020
20	CEPCT 404	Structural Analysis	2020
21	CEPCT 405	Environmental Engineering	2020
22	CEPCT 406	Soil Mechanics	2020
23	CEPCD 407	Computer aided Building Drawing	2020
24	CEPCP 408	Fluid Mechanics and Hydraulic Machines Lab	2020
25	CEESP 409	Materials Testing Lab	2020
26	CEPCT 501	Hydraulic Engineering	2020
27	CEPET 502	Advanced Environmental Engineering	2020
28	CEPCT 503	Foundation Engineering	2020
29	CEPET 504	Remote Sensing And GIS	2020
30	CEPCT 505	Reinforced Concrete Design	2020
31	CEPCT 506	Design of Steel Structures	2020
32	CEPCP 507	Hydraulic Engineering Lab	2020
33	CEPCP 508	Soil Mechanics Lab	2020
34	CEPCT 601	Hydrology and Water Resources Engineering	2021
35	CEPCT 602	Transportation Engineering	2021
36	CEOET 603-PE3	Concrete Technology	2021
37	CEPET 604-PE4	Advanced Foundation Engineering	2021
38	CEPCP 606	Environmental Engineering Lab	2021
39	CEPCP 607	Transportation Engineering Lab	2021
40	CEPCT 701	Estimation & Costing	2021
41	CEPET 703-PE5	Watershed Management	2021
42	CEPCI 705	Industry Internship	2021
43	CEPCX 706	Project Work - Phase I	2021
44	CEPET 802- PE6	Pre-stressed Concrete	2022
45	CEPCX 803	Project Work - Phase II	2022

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CEPCT 303	Surveying	2019	13/54= 24.1%
2	CEPCP 307	Surveying Lab	2019	
3	CEPCT 304	Building Materials and Construction Technology	2019	
4	CEESP 409	Materials Testing Lab	2020	
5	CEPCT 406	Soil Mechanics	2020	
6	CEPCT 404	Structural Analysis	2020	
7	CEPCP 508	Soil Mechanics Lab	2020	
8	CEPCT 503	Foundation Engineering	2020	
9	CEPCT 505	Reinforced Concrete Design	2020	
10	CEPCT 506	Design of Steel Structures	2020	
11	CEPET 604	Advanced Foundation Engineering	2021	
12	CEOET 603	Concrete Technology	2021	
13	CEPCT 701	Estimation & Costing	2021	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	ENHSP 106	English Communication Lab	2018	
2	MEEST 105	Engineering Graphics & Design	2018	
3	CSEST 203	Programming for Problem solving	2019	
4	CSESP 206	Computer Programming Lab	2019	
5	MEESP 205	Workshop/Manufacturing Practices	2019	

6	CSESP 206	Computer Programming Lab	2019	14/54= 25.9%
7	CEPCT 303	Surveying	2019	
8	CEPCP 307	Surveying Lab	2019	
9	PAMCT 401	Constitution of India	2020	
10	CEPCD 407	Computer aided Building Drawing	2020	
11	CEESP 409	Materials Testing Lab	2020	
12	CEPET 504	Remote Sensing And GIS	2020	
13	MGHST 608	Management(Organizational Behaviour)	2021	
14	CEPCI 705	Industry Internship	2021	

1.1.3. Employability/ Entrepreneurship/ Skill development – Mapping

S. No.	Name of the Programme	Course Code	Title of the Course	Year of Introduction	Employability	Entrepreneurship	Skill development
1	B.Tech	MA 101	Mathematics – I	2020	√		
2		EN103	English	2020	√		
3		EN 106	English Communication Lab	2020	√		
4		ME 105	Engineering Graphics & Design	2020			√
5		EN 106	English Communication Lab	2020			√
6		MA 201	Mathematics – II	2021	√		
7		CS 203	Programming for Problem solving	2021	√		
8		CE 204	Engineering Mechanics	2021	√		
9		ME 205	Workshop/Manufacturing Practices	2021	√		
10		CS 206	Programming for Problem solving Lab	2021	√		
11		CE 207	Environmental Science	2021	√		
12		ME 205	Workshop/Manufacturing Practices	2021			√
13		CS 206	Programming for Problem solving Lab	2021			√
14		MA301BS	Mathematics – III(Common to all branches)	2021	√		
15		CE302C	Strength of Materials	2021	√		
16		CE304C	Surveying	2021	√		
17		CE305C	Building Materials and Construction Technology	2021	√		
18		CE306C	Engineering Geology	2021	√		
19		CE 307P	Surveying Lab	2021	√		
20		CE309S	Skill Development Course I	2021	√		
21		CE304C	Surveying	2021		√	
22		CE305C	Building Materials and Construction Technology	2021		√	
23		CE 307P	Surveying Lab	2021		√	
24		HS303CO	Managerial Economics and Accountancy (Common to all branches)	2021			√
25		CE304C	Surveying	2021			√
26		CE 307P	Surveying Lab	2021			√
27		CE309S	Skill Development Course I	2021			√
28		PA310A	Constitution of India(Common to all branches)	2021			√
29		MA401C	Probability & Statistics (Common to all branches)	2022	√		
30		CE402C	Concrete Technology	2022	√		

31		CE403C	Fluid Mechanics and Hydraulic Machines	2022	√		
32		CE404C	Structural Analysis-I	2022	√		
33		CE405C	Water Quality and Treatment	2022	√		
34		CE406C	Soil Mechanics	2022	√		
35		CE407P	Fluid Mechanics and Hydraulic Machines Lab	2022	√		
36		CE408P	Soil Mechanics Lab	2022	√		
37		CE409S	Skill Development Course 2	2022	√		
38		CE410P	Computer Aided Building Drawing	2022	√		
39		MC411B	NCC/NSS/NSO	2022	√		
40		CE402C	Concrete Technology and Construction Equipment	2022		√	
41		CE404C	Structural Analysis	2022		√	
42		CE406C	Soil Mechanics	2022		√	
43		CE408P	Materials Testing Lab	2022		√	
44		CE410P	Computer Aided Building Drawing	2022		√	
45		MC411B	NCC/NSS	2022			√
46		CE409S	Skill Development Course 2	2022			√
47		CE410P	Computer Aided Building Drawing	2022			√

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MA 101	Mathematics – I	2020	27/35= 77.1%
2	EN103	English	2020	
3	EN 106	English Communication Lab	2020	
4	MA 201	Mathematics – II	2021	
5	CS 203	Programming for Problem solving	2021	
6	CE 204	Engineering Mechanics	2021	
7	ME 205	Workshop/Manufacturing Practices	2021	
8	CS 206	Programming for Problem solving Lab	2021	
9	CE 207	Environmental Science	2021	
10	MA301BS	Mathematics – III(<i>Common to all branches</i>)	2021	
11	CE302C	Strength of Materials	2021	
12	CE304C	Surveying	2021	
13	CE305C	Building Materials and Construction Technology	2021	
14	CE306C	Engineering Geology	2021	
15	CE 307P	Surveying Lab	2021	
16	CE309S	Skill Development Course1	2021	
17	MA401C	Probability & Statistics (<i>Common to all branches</i>)	2022	
18	CE402C	Concrete Technology	2022	
19	CE403C	Fluid Mechanics and Hydraulic Machines	2022	
20	CE404C	Structural Analysis-I	2022	

21	CE405C	Water Quality and Treatment	2022
22	CE406C	Soil Mechanics	2022
23	CE407P	Fluid Mechanics and Hydraulic Machines Lab	2022
24	CE408P	Soil Mechanics Lab	2022
25	CE409S	Skill Development Course 2	2022
26	CE410P	Computer Aided Building Drawing	2022
27	MC411B	NCC/NSS/NSO	2022

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CE304C	Surveying	2021	8/34= 23.5%
2	CE305C	Building Materials and Construction Technology	2021	
3	CE 307P	Surveying Lab	2021	
4	CE402C	Concrete Technology and Construction Equipment	2022	
5	CE404C	Structural Analysis	2022	
6	CE406C	Soil Mechanics	2022	
7	CE408P	Materials Testing Lab	2022	
8	CE410P	Computer Aided Building Drawing	2022	
S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	ME 105	Engineering Graphics & Design	2020	12/34= 35.3%
2	EN 106	English Communication Lab	2020	
3	ME 205	Workshop/Manufacturing Practices	2021	
4	CS 206	Programming for Problem solving Lab	2021	
5	HS303CO	Managerial Economics and Accountancy (Common to all branches)	2021	
6	CE304C	Surveying	2021	
7	CE 307P	Surveying Lab	2021	
8	CE309S	Skill Development Course1	2021	
9	PA310A	Constitution of India(Common to all branches)	2021	
10	MC411B	NCC/NSS	2022	
11	CE409S	Skill Development Course 2	2022	
12	CE410P	Computer Aided Building Drawing	2022	

B.TECH MECHANICAL (2016-17)

S. No.		Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	B.TECH	MAT01	Engineering Mathematics – I	2016	✓		
2		B.TECH	CST01	Computer programming	2016	✓		✓
3		B.TECH	CET01	Environmental Studies	2016	✓		✓
4		B.TECH	PHT01	Engineering Physics	2016	✓		
5		B.TECH	CYT01	Engineering Chemistry	2016	✓		
6		B.TECH	MET01	Engineering Graphics	2016	✓		
7		B.TECH	CSP01	Computer Programming Lab	2016			✓
8		B.TECH	MEP 01	Workshop Practice	2016			✓
9	II SEM	B.TECH	MAT02	Engineering Mathematics – II	2016	✓		
10		B.TECH	CST02	Data Structures	2016	✓		✓
11		B.TECH	EET01	Basic Electrical Engineering	2016	✓		✓
12		B.TECH	ECT01	Basic Electronics Engineering	2016	✓		✓
13		B.TECH	CET41	Engineering Mechanics	2016	✓		✓
14		B.TECH	ENT01	English	2016			✓
15		B.TECH	CSP02	Data Structures Lab	2016			✓
16		B.TECH	ENP 01	English Communication Lab	2016			✓
17	III SEM	B.TECH	MAT03	Mathematics – III	2016	✓		
18		B.TECH	CET42	Mechanics of Solids	2016	✓		✓
19		B.TECH	FEC01	Professional Ethics	2016	✓		✓
20		B.TECH	MET02	Thermodynamics	2016			✓
21		B.TECH	MET03	Advanced Engg. Graphics	2016	✓		
22		B.TECH	MET04	Manufacturing Processes	2016	✓		✓
23		B.TECH	CEP41	Mechanics of Solids Lab	2016			✓
24		B.TECH	MEP02	Manufacturing Processes Lab	2016			✓

25	IV SEM	B.TECH	EOT01	Managerial Economics	2016	✓		
26		B.TECH	MET05	Kinematics of Machinery	2016	✓		
27		B.TECH	MET06	Thermal Engineering	2016	✓		
28		B.TECH	MET07	Machine Tools and Metal Cutting	2016	✓		✓
29		B.TECH	CET43	Fluid Mechanics and Hydraulic Machinery	2016	✓		
30		B.TECH	MET08	Machine Drawing	2016	✓	✓	✓
31		B.TECH	CEP42	Fluid Mechanics and Hydraulic Machinery Lab	2016			✓
32		B.TECH	ECP43	Electricals Engineering Lab	2016			✓
33		B.TECH	ECP42	Electronics Engineering Lab	2016			✓
34		V SEM	B.TECH	COT02	Managerial Accountancy	2016	✓	✓
35	B.TECH		MET09	Mechanical Measurements and Metrology	2016	✓	✓	✓
36	B.TECH		MET10	Dynamics of Machinery (DOM)	2016	✓		
37	B.TECH		MET11	IC Engines and Gas Turbines	2016	✓		
38	B.TECH		MET12	Materials Science and Metallurgy	2016	✓	✓	✓
39	B.TECH		MET13	Design of Machine Members – I	2016	✓		
40	B.TECH		MEP03	Machine Tools Lab	2016		✓	✓
41	B.TECH		MEP04	Fuels Lab	2016			✓
42	B.TECH		MET14	Refrigeration and Air – Conditioning	2016		✓	✓
43	B.TECH		MET15	Operations Research	2016	✓		
44	B.TECH	MET16	Design of Machine Members – II	2016	✓			
45	B.TECH	MET17	Industrial Engineering and Management	2016	✓	✓		
46	B.TECH	MEOE	Open Elective – I (OPE – I)	2016	✓			

47	VI SEM	B.TECH	MEDE	Departmental Elective – I (DPE-I)	2016	✓		
48		B.TECH	MEP05	IC Engines Lab	2016			✓
49		B.TECH	MEP06	Metrology Lab	2016			✓
50	VII SEM	B.TECH	MET18	Analysis and Control of Production Systems	2016	✓	✓	
51		B.TECH	MET19	Tool Design	2016	✓		
52		B.TECH	MET20	Automobile Engineering	2016		✓	✓
53		B.TECH	MET21	Finite Element Method	2016	✓		
54		B.TECH	MET22	Heat Transfer	2016	✓		
55		B.TECH	MEOE	Open Elective – II (OPE II)	2016	✓		
56		B.TECH	MEP07	Heat Transfer and Dynamics Lab	2016			✓
57	B.TECH	ECP43	MATLAB	2016			✓	
58	VIII SEM	B.TECH	MET23	CAD/CAM	2016		✓	✓
59		B.TECH	MEDE	Departmental Elective II (DPE II)	2016	✓		
60		B.TECH	MEP08	CAD/CAM Lab	2016		✓	✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MAT01	Engineering Mathematics – I	2016	40/60= 66.66%
2	B.TECH	CST01	Computer programming	2016	
3	B.TECH	CET01	Environmental Studies	2016	
4	B.TECH	PHT01	Engineering Physics	2016	
5	B.TECH	CYT01	Engineering Chemistry	2016	
6	B.TECH	MET01	Engineering Graphics	2016	
7	B.TECH	MAT02	Engineering Mathematics – II	2016	
8	B.TECH	CST02	Data Structures	2016	
9	B.TECH	EET01	Basic Electrical Engineering	2016	
10	B.TECH	ECT01	Basic Electronics Engineering	2016	
11	B.TECH	CET41	Engineering Mechanics	2016	
12	B.TECH	MAT03	Mathematics – III	2016	
13	B.TECH	CET42	Mechanics of Solids	2016	
14	B.TECH	FEC01	Professional Ethics	2016	
15	B.TECH	MET03	Advanced Engg. Graphics	2016	
16	B.TECH	MET04	Manufacturing Processes	2016	
17	B.TECH	EOT01	Managerial Economics	2016	
18	B.TECH	MET05	Kinematics of Machinery	2016	
19	B.TECH	MET06	Thermal Engineering	2016	

20	B.TECH	MET07	Machine Tools and Metal Cutting	2016
21	B.TECH	CET43	Fluid Mechanics and Hydraulic Machinery	2016
22	B.TECH	MET08	Machine Drawing	2016
23	B.TECH	COT02	Managerial Accountancy	2016
24	B.TECH	MET09	Mechanical Measurements and Metrology	2016
25	B.TECH	MET10	Dynamics of Machinery (DOM)	2016
26	B.TECH	MET11	IC Engines and Gas Turbines	2016
27	B.TECH	MET12	Materials Science and Metallurgy	2016
28	B.TECH	MET13	Design of Machine Members – I	2016
29	B.TECH	MET15	Operations Research	2016
30	B.TECH	MET16	Design of Machine Members – II	2016
31	B.TECH	MET17	Industrial Engineering and Management	2016
32	B.TECH	MEOE	Open Elective – I (OPE – I)	2016
33	B.TECH	MEDE	Departmental Elective – I (DPE-I)	2016
34	B.TECH	MET18	Analysis and Control of Production Systems	2016
35	B.TECH	MET19	Tool Design	2016
36	B.TECH	MET20	Automobile Engineering	2016
37	B.TECH	MET21	Finite Element Method	2016
38	B.TECH	MET22	Heat Transfer	2016
39	B.TECH	MEOE	Open Elective – II (OPE II)	2016
40	B.TECH	MEDE	Departmental Elective II (DPE II)	2016

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	FEC01	Professional Ethics	2016	$\frac{13}{60} = 21.66\%$
2	B.TECH	EOT01	Managerial Economics	2016	
3	B.TECH	MET08	Machine Drawing	2016	
4	B.TECH	COT02	Managerial Accountancy	2016	
5	B.TECH	MET09	Mechanical Measurements and Metrology	2016	
6	B.TECH	MEP03	Machine Tools Lab	2016	
7	B.TECH	MEP04	Fuels Lab	2016	
8	B.TECH	MET14	Refrigeration and Air – Conditioning	2016	
9	B.TECH	MET17	Industrial Engineering and Management	2016	
10	B.TECH	MET18	Analysis and Control of Production Systems	2016	
11	B.TECH	MET20	Automobile Engineering	2016	
12	B.TECH	MET23	CAD/CAM	2016	
13	B.TECH	MEP08	CAD/CAM Lab	2016	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	CST01	Computer programming	2016	25/60= 41.66%
2	B.TECH	CSP01	Computer Programming Lab	2016	
3	B.TECH	MEP 01	Workshop Practice	2016	
4	B.TECH	CST02	Data Structures	2016	
5	B.TECH	EET01	Basic Electrical Engineering	2016	
6	B.TECH	ECT01	Basic Electronics Engineering	2016	
7	B.TECH	ENT01	English	2016	
8	B.TECH	CSP02	Data Structures Lab	2016	
9	B.TECH	ENP 01	English Communication Lab	2016	
10	B.TECH	CEP41	Mechanics of Solids Lab	2016	
11	B.TECH	MEP02	Manufacturing Processes Lab	2016	
12	B.TECH	MET08	Machine Drawing	2016	
13	B.TECH	CEP42	Fluid Mechanics and Hydraulic Machinery Lab	2016	
14	B.TECH	EEP43	Electricals Engineering Lab	2016	
15	B.TECH	ECP42	Electronics Engineering Lab	2016	
16	B.TECH	MEP03	Machine Tools Lab	2016	

17	B.TECH	MEP04	Fuels Lab	2016
18	B.TECH	MET14	Refrigeration and Air – Conditioning	2016
19	B.TECH	MEP05	IC Engines Lab	2016
20	B.TECH	MEP06	Metrology Lab	2016
21	B.TECH	MET20	Automobile Engineering	2016
22	B.TECH	MEP07	Heat Transfer and Dynamics Lab	2016
23	B.TECH	ECP43	MATLAB	2016
24	B.TECH	MET23	CAD/CAM	2016
25	B.TECH	MEP08	CAD/CAM Lab	2016

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

B.TECH MECHANICAL (2017-18)

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	B.TECH	MAT01	Engineering Mathematics – I	2016	✓	
2		B.TECH	CST01	Computer programming	2016	✓	✓
3		B.TECH	CET01	Environmental Studies	2016	✓	✓
4		B.TECH	PHT01	Engineering Physics	2016	✓	
5		B.TECH	CYT01	Engineering Chemistry	2016	✓	
6		B.TECH	MET01	Engineering Graphics	2016	✓	
7		B.TECH	CSP01	Computer Programming Lab	2016		✓
8		B.TECH	MEP 01	Workshop Practice	2016		✓
9	II SEM	B.TECH	MAT02	Engineering Mathematics – II	2016	✓	
10		B.TECH	CST02	Data Structures	2016	✓	✓
11		B.TECH	EET01	Basic Electrical Engineering	2016	✓	✓
12		B.TECH	ECT01	Basic Electronics Engineering	2016	✓	✓

13		B.TECH	CET41	Engineering Mechanics	2016	✓		✓
14		B.TECH	ENT01	English	2016			✓
15		B.TECH	CSP02	Data Structures Lab	2016			✓
16		B.TECH	ENP 01	English Communication Lab	2016			✓
17	III SEM	B.TECH	MAT03	Mathematics – III	2016	✓		
18		B.TECH	CET42	Mechanics of Solids	2016	✓		✓
19		B.TECH	FEC01	Professional Ethics	2016	✓		✓
20		B.TECH	MET02	Thermodynamics	2016			✓
21		B.TECH	MET03	Advanced Engg. Graphics	2016	✓		
22		B.TECH	MET04	Manufacturing Processes	2016	✓		✓
23		B.TECH	CEP41	Mechanics of Solids Lab	2016			✓
24		B.TECH	MEP02	Manufacturing Processes Lab	2016			✓
25	IV SEM	B.TECH	EOT01	Managerial Economics	2016	✓		
26		B.TECH	MET05	Kinematics of Machinery	2016	✓		
27		B.TECH	MET06	Thermal Engineering	2016	✓		
28		B.TECH	MET07	Machine Tools and Metal Cutting	2016	✓		✓
29		B.TECH	CET43	Fluid Mechanics and Hydraulic Machinery	2016	✓		
30		B.TECH	MET08	Machine Drawing	2016	✓	✓	✓
31		B.TECH	CEP42	Fluid Mechanics and Hydraulic Machinery Lab	2016			✓
32		B.TECH	EET43	Electricals Engineering Lab	2016			✓
33		B.TECH	ECP42	Electronics Engineering Lab	2016			✓
34		B.TECH	COT02	Managerial Accountancy	2016	✓	✓	
35	B.TECH	MET09	Mechanical Measurements and Metrology	2016	✓	✓	✓	
36	B.TECH	MET10	Dynamics of Machinery (DOM)	2016	✓			

37	V SEM	B.TECH	MET11	IC Engines and Gas Turbines	2016	✓			
38		B.TECH	MET12	Materials Science and Metallurgy	2016	✓	✓	✓	
39		B.TECH	MET13	Design of Machine Members – I	2016	✓			
40		B.TECH	MEP03	Machine Tools Lab	2016		✓	✓	
41		B.TECH	MEP04	Fuels Lab	2016			✓	
42	VI SEM	B.TECH	MET14	Refrigeration and Air – Conditioning	2016		✓	✓	
43		B.TECH	MET15	Operations Research	2016	✓			
44		B.TECH	MET16	Design of Machine Members – II	2016	✓			
45		B.TECH	MET17	Industrial Engineering and Management	2016	✓	✓		
46		B.TECH	MEOE	Open Elective – I (OPE – I)	2016	✓			
47		B.TECH	MEDE	Departmental Elective – I (DPE-I)	2016	✓			
48		B.TECH	MEP05	IC Engines Lab	2016			✓	
49		B.TECH	MEP06	Metrology Lab	2016			✓	
50		VII SEM	B.TECH	MET18	Analysis and Control of Production Systems	2016	✓	✓	
51			B.TECH	MET19	Tool Design	2016	✓		
52	B.TECH		MET20	Automobile Engineering	2016		✓	✓	
53	B.TECH		MET21	Finite Element Method	2016	✓			
54	B.TECH		MET22	Heat Transfer	2016	✓			
55	B.TECH		MEOE	Open Elective – II (OPE II)	2016	✓			
56	B.TECH		MEP07	Heat Transfer and Dynamics Lab	2016			✓	
57	B.TECH		ECP43	MATLAB	2016			✓	
58	VIII SEM	B.TECH	MET23	CAD/CAM	2016		✓	✓	
59		B.TECH	MEDE	Departmental Elective II (DPE II)	2016	✓			
60		B.TECH	MEP08	CAD/CAM Lab	2016		✓	✓	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MAT01	Engineering Mathematics – I	2016	
2	B.TECH	CST01	Computer programming	2016	
3	B.TECH	CET01	Environmental Studies	2016	
4	B.TECH	PHT01	Engineering Physics	2016	
5	B.TECH	CYT01	Engineering Chemistry	2016	
6	B.TECH	MET01	Engineering Graphics	2016	
7	B.TECH	MAT02	Engineering Mathematics – II	2016	
8	B.TECH	CST02	Data Structures	2016	
9	B.TECH	EET01	Basic Electrical Engineering	2016	
10	B.TECH	ECT01	Basic Electronics Engineering	2016	
11	B.TECH	CET41	Engineering Mechanics	2016	

12	B.TECH	MAT03	Mathematics – III	2016
13	B.TECH	CET42	Mechanics of Solids	2016
14	B.TECH	FEC01	Professional Ethics	2016
15	B.TECH	MET03	Advanced Engg. Graphics	2016
16	B.TECH	MET04	Manufacturing Processes	2016
17	B.TECH	EOT01	Managerial Economics	2016
18	B.TECH	MET05	Kinematics of Machinery	2016
19	B.TECH	MET06	Thermal Engineering	2016
20	B.TECH	MET07	Machine Tools and Metal Cutting	2016
21	B.TECH	CET43	Fluid Mechanics and Hydraulic Machinery	2016
22	B.TECH	MET08	Machine Drawing	2016
23	B.TECH	COT02	Managerial Accountancy	2016
24	B.TECH	MET09	Mechanical Measurements and Metrology	2016
25	B.TECH	MET10	Dynamics of Machinery (DOM)	2016
26	B.TECH	MET11	IC Engines and Gas Turbines	2016
27	B.TECH	MET12	Materials Science and Metallurgy	2016
28	B.TECH	MET13	Design of Machine Members – I	2016
29	B.TECH	MET15	Operations Research	2016
30	B.TECH	MET16	Design of Machine Members – II	2016
31	B.TECH	MET17	Industrial Engineering and Management	2016
32	B.TECH	MEOE	Open Elective – I (OPE – I)	2016
33	B.TECH	MEDE	Departmental Elective – I (DPE-I)	2016
34	B.TECH	MET18	Analysis and Control of	2016

40/60= 66.66%

			Production Systems	
35	B.TECH	MET19	Tool Design	2016
36	B.TECH	MET20	Automobile Engineering	2016
37	B.TECH	MET21	Finite Element Method	2016
38	B.TECH	MET22	Heat Transfer	2016
39	B.TECH	MEOE	Open Elective – II (OPE II)	2016
40	B.TECH	MEDE	Departmental Elective II (DPE II)	2016

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	FEC01	Professional Ethics	2016	
2	B.TECH	EOT01	Managerial Economics	2016	
3	B.TECH	MET08	Machine Drawing	2016	
4	B.TECH	COT02	Managerial Accountancy	2016	
5	B.TECH	MET09	Mechanical Measurements and Metrology	2016	
6	B.TECH	MEP03	Machine Tools Lab	2016	
7	B.TECH	MEP04	Fuels Lab	2016	
8	B.TECH	MET14	Refrigeration and Air – Conditioning	2016	

9	B.TECH	MET17	Industrial Engineering and Management	2016	13/60=21.66%
10	B.TECH	MET18	Analysis and Control of Production Systems	2016	
11	B.TECH	MET20	Automobile Engineering	2016	
12	B.TECH	MET23	CAD/CAM	2016	
13	B.TECH	MEP08	CAD/CAM Lab	2016	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	CST01	Computer programming	2016	
2	B.TECH	CSP01	Computer Programming Lab	2016	
3	B.TECH	MEP 01	Workshop Practice	2016	
4	B.TECH	CST02	Data Structures	2016	
5	B.TECH	EET01	Basic Electrical Engineering	2016	
6	B.TECH	ECT01	Basic Electronics Engineering	2016	
7	B.TECH	ENT01	English	2016	
8	B.TECH	CSP02	Data Structures Lab	2016	
9	B.TECH	ENP 01	English Communication Lab	2016	

10	B.TECH	CEP41	Mechanics of Solids Lab	2016	25/60= 41.66%
11	B.TECH	MEP02	Manufacturing Processes Lab	2016	
12	B.TECH	MET08	Machine Drawing	2016	
13	B.TECH	CEP42	Fluid Mechanics and Hydraulic Machinery Lab	2016	
14	B.TECH	EEP43	Electricals Engineering Lab	2016	
15	B.TECH	ECP42	Electronics Engineering Lab	2016	
16	B.TECH	MEP03	Machine Tools Lab	2016	
17	B.TECH	MEP04	Fuels Lab	2016	
18	B.TECH	MET14	Refrigeration and Air – Conditioning	2016	
19	B.TECH	MEP05	IC Engines Lab	2016	
20	B.TECH	MEP06	Metrology Lab	2016	
21	B.TECH	MET20	Automobile Engineering	2016	
22	B.TECH	MEP07	Heat Transfer and Dynamics Lab	2016	
23	B.TECH	ECP43	MATLAB	2016	
24	B.TECH	MET23	CAD/CAM	2016	
25	B.TECH	MEP08	CAD/CAM Lab	2016	

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

B.TECH MECHANICAL (2018-19)

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	
1	I SEM	B.TECH	MABST101	Mathematics–I	2018	✓	✓	
2		B.TECH	CYBST102	Engineering Chemistry	2018	✓	✓	
3		B.TECH	ENHST103	English	2018		✓	✓
4		B.TECH	EEEST104	Basic Electrical & Electronics Engineering	2018	✓		✓
5		B.TECH	MEEST105	Engineering Graphics	2018	✓		✓
6		B.TECH	ENHSP106	English Communications Lab	2018		✓	✓

7	II SEM	B.TECH	MABST201	Mathematics–II	2018	✓		✓
8		B.TECH	PYBST202	Engineering Physics	2018	✓		
9		B.TECH	CSEST203	Programs for problem solving	2018	✓		✓
10		B.TECH	MEEST204	Manufacturing Processes	2018	✓		
11		B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	✓		✓
12		B.TECH	CSESP206	Programs for problem solving Lab	2018	✓		✓
13		B.TECH	CEMCT207	Environmental Science	2018	✓	✓	
14	III SEM	B.TECH	MEPCT301	Thermodynamics	2018	✓		✓
15		B.TECH	MABST302	Numerical Methods	2018	✓		✓
16		B.TECH	MEPCT303	Industrial safety and measures	2018	✓	✓	✓
17		B.TECH	CEEST304	Engineering Mechanics	2018	✓		
18		B.TECH	MEPCT305	Manufacturing Technology	2018	✓		
19		B.TECH	COHST306	Finance and Accounting	2018		✓	✓
20		B.TECH	MEPCT308	Advanced Engineering Graphics	2018			✓
21	B.TECH	MEPCP309	Manufacturing Process Lab	2018	✓		✓	
22	IV SEM	B.TECH	PAMCT401	ConstitutionofIndia	2018		✓	
23		B.TECH	MEPCT402	Applied Thermodynamics	2018	✓		
24		B.TECH	CEPCT403	FluidMechanics &FluidMachines	2018	✓		✓
25		B.TECH	CEPCT404	Solid Mechanics	2018	✓		
26		B.TECH	MEPCT405	MaterialsEngineering	2018	✓	✓	
27		B.TECH	MEPCT406	Instrumentation and Control	2018	✓		✓
28		B.TECH	MEPCT407	Machine Drawing	2018	✓		✓
29		B.TECH	MEHST 408	Operations Research	2018	✓		
30		B.TECH	MEPCP409	Fuels and IC Engines Laboratory	2018	✓		
31		B.TECH	MEPCT501	HeatTransfer	2018	✓		

32	V SEM	B.TECH	MEPCT502	DesignofMachine Elements	2018			✓
33		B.TECH	MEPCT504	KinematicsofMachinery	2018	✓		✓
34		B.TECH	MEPET505	Elective-I	2018	✓		✓
35		B.TECH	MEPCP507	MachineToolsandAutomation Lab	2018	✓		✓
36		B.TECH	MEPCP508	Metrology Lab	2018	✓	✓	✓
37	VI SEM	B.TECH	EOHST601	Economics	2018		✓	
38		B.TECH	MEPCT602	Machine Design	2018			✓
39		B.TECH	MEPCT603	Dynamics of Machinery	2018	✓		✓
40		B.TECH	MEPET604	Elective-II	2018	✓		✓
41		B.TECH	MEPCP605	Strength of Materials & Fluid MechanicsLaboratory	2018	✓		✓
42		B.TECH	MEPCP606	Heat Transfer Laboratory	2018	✓		✓
43		B.TECH	MEOET607	Open Elective-I (MOOCS)	2018			✓
44		B.TECH	MEOET608	Open Elective-II (MOOCS)	2018			✓
45	VII SEM	B.TECH	MEPET701	Automobile Engineering	2018	✓		✓
46		B.TECH	MEPET702	Elective-III	2018			
47		B.TECH	MEPEP703	CAD / CAM Laboratory	2018	✓	✓	✓
48	VIII SEM	B.TECH	MEPET801	Elective -IV	2018			
49		B.TECH	MEPCP802	Project Work Phase-II	2018		✓	✓
50		B.TECH	MEOET803	Open Elective-III (MOOCS)	2018			✓
51		B.TECH	MEPET804	Open Elective-IV (MOOCS)	2018			✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MABST101	Mathematics–I	2018	36/51= 70.58%
2	B.TECH	CYBST102	Engineering Chemistry	2018	
3	B.TECH	EEEST104	BasicElectrical& Electronics Engineering	2018	
4	B.TECH	MEEST105	EngineeringGraphics	2018	
5	B.TECH	MABST201	Mathematics–II	2018	
6	B.TECH	PYBST202	Engineering Physics	2018	
7	B.TECH	CSEST203	Programs for problem solving	2018	
8	B.TECH	MEEST204	Manufacturing Processes	2018	
9	B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	
10	B.TECH	CSESP206	Programs for problem solving Lab	2018	
11	B.TECH	CEMCT207	Environmental Science	2018	
12	B.TECH	MEPCT301	Thermodynamics	2018	
13	B.TECH	MEPCT303	Industrial safety and measures	2018	
14	B.TECH	CEEST304	Engineering Mechanics	2018	
15	B.TECH	MEPCT305	Manufacturing Technology	2018	
16	B.TECH	MEPCP309	Manufacturing Process Lab	2018	

17	B.TECH	MEPCT402	Applied Thermodynamics	2018
18	B.TECH	CEPCT403	FluidMechanics & FluidMachines	2018
19	B.TECH	CEPCT404	Solid Mechanics	2018
20	B.TECH	MEPCT405	MaterialsEngineering	2018
21	B.TECH	MEPCT406	Instrumentation and Control	2018
22	B.TECH	MEPCT407	Machine Drawing	2018
23	B.TECH	MEHST 408	Operations Research	2018
24	B.TECH	MEPCP409	Fuels and IC Engines Laboratory	2018
25	B.TECH	MEPCT501	HeatTransfer	2018
26	B.TECH	MEPCT504	KinematicsofMachinery	2018
27	B.TECH	MEPET505	Elective-I	2018
28	B.TECH	MEPCP507	MachineToolsandAutomation Lab	2018
29	B.TECH	MEPCP508	Metrology Lab	2018
30	B.TECH	MEPCT603	Dynamics of Machinery	2018
31	B.TECH	MEPET604	Elective-II	2018
32	B.TECH	MEPCP605	Strength of Materials & Fluid MechanicsLaboratory	2018
33	B.TECH	MEPCP606	Heat Transfer Laboratory	2018
34	B.TECH	MEPET701	Automobile Engineering	2018
35	B.TECH	MEPET702	Elective-III	2018
36	B.TECH	MEPEP703	CAD / CAM Laboratory	2018

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	ENHST103	English	2018	10/51= 70.58%
2	B.TECH	ENHSP106	English Communications Lab	2018	
3	B.TECH	CEMCT207	Environmental Science	2018	
4	B.TECH	COHST306	Finance and Accounting	2018	
5	B.TECH	PAMCT401	ConstitutionofIndia	2018	
6	B.TECH	MEPCT405	MaterialsEngineering	2018	
7	B.TECH	MEPCP508	Metrology Lab	2018	
8	B.TECH	EOHST601	Economics	2018	
9	B.TECH	MEPEP703	CAD / CAM Laboratory	2018	
10	B.TECH	MEPCP802	Project Work Phase-II	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	MABST101	Mathematics–I	2018	35/51= 68.62%
2	B.TECH	CYBST102	Engineering Chemistry	2018	
3	B.TECH	ENHST103	English	2018	
4	B.TECH	EEEST104	BasicElectrical& Electronics Engineering	2018	
5	B.TECH	MEEST105	EngineeringGraphics	2018	
6	B.TECH	ENHSP106	English Communications Lab	2018	
7	B.TECH	MABST201	Mathematics–II	2018	
8	B.TECH	CSEST203	Programs for problem solving	2018	
9	B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	
10	B.TECH	CSESP206	Programs for problem solving Lab	2018	
11	B.TECH	MEPCT301	Thermodynamics	2018	
12	B.TECH	MABST302	Numerical Methods	2018	
13	B.TECH	COHST306	Finance and Accounting	2018	
14	B.TECH	MEPCT308	Advanced Engineering Graphics	2018	
15	B.TECH	MEPCP309	Manufacturing Process Lab	2018	
16	B.TECH	CEPCT403	FluidMechanics &FluidMachines	2018	

17	B.TECH	MEPCT406	Instrumentation and Control	2018
18	B.TECH	MEPCT407	Machine Drawing	2018
19	B.TECH	MEPCT502	Design of Machine Elements	2018
20	B.TECH	MEPCT504	Kinematics of Machinery	2018
21	B.TECH	MEPET505	Elective-I	2018
22	B.TECH	MEPCP507	Machine Tools and Automation Lab	2018
23	B.TECH	MEPCP508	Metrology Lab	2018
24	B.TECH	MEPCT602	Machine Design	2018
25	B.TECH	MEPCT603	Dynamics of Machinery	2018
26	B.TECH	MEPET604	Elective-II	2018
27	B.TECH	MEPCP605	Strength of Materials & Fluid Mechanics Laboratory	2018
28	B.TECH	MEPCP606	Heat Transfer Laboratory	2018
29	B.TECH	MEOET607	Open Elective-I (MOOCS)	2018
30	B.TECH	MEOET608	Open Elective-II (MOOCS)	2018
31	B.TECH	MEPET701	Automobile Engineering	2018
32	B.TECH	MEPEP703	CAD / CAM Laboratory	2018
33	B.TECH	MEPCP802	Project Work Phase-II	2018
34	B.TECH	MEOET803	Open Elective-III (MOOCS)	2018
35	B.TECH	MEPET804	Open Elective-IV (MOOCS)	2018

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

B.TECH MECHANICAL (2019-20)

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
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1	I SEM	B.TECH	MABST101	Mathematics–I	2018	✓		✓
2		B.TECH	CYBST102	Engineering Chemistry	2018	✓		✓
3		B.TECH	ENHST103	English	2018		✓	✓
4		B.TECH	EEEST104	BasicElectrical& Electronics Engineering	2018	✓		✓
5		B.TECH	MEEST105	EngineeringGraphics	2018	✓		✓
6		B.TECH	ENHSP106	English Communications Lab	2018		✓	✓
7	II SEM	B.TECH	MABST201	Mathematics–II	2018	✓		✓
8		B.TECH	PYBST202	Engineering Physics	2018	✓		
9		B.TECH	CSEST203	Programs for problem solving	2018	✓		✓
10		B.TECH	MEEST204	Manufacturing Processes	2018	✓		
11		B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	✓		✓
12		B.TECH	CSESP206	Programs for problem solving Lab	2018	✓		✓
13	B.TECH	CEMCT207	Environmental Science	2018	✓	✓		
14	III SEM	B.TECH	MEPCT301	Thermodynamics	2018	✓		✓
15		B.TECH	MABST302	Numerical Methods	2018	✓		✓
16		B.TECH	MEPCT303	Industrial safety and measures	2018	✓	✓	✓
17		B.TECH	CEEST304	Engineering Mechanics	2018	✓		
18		B.TECH	MEPCT305	Manufacturing Technology	2018	✓		
19		B.TECH	COHST306	Finance and Accounting	2018		✓	✓
20		B.TECH	MEPCT308	Advanced Engineering Graphics	2018			✓
21		B.TECH	MEPCP309	Manufacturing Process Lab	2018	✓		✓
22		B.TECH	PAMCT401	ConstitutionofIndia	2018		✓	
23	B.TECH	MEPCT402	Applied Thermodynamics	2018	✓			
24	B.TECH	CEPCT403	FluidMechanics &FluidMachines	2018	✓		✓	

25	IV SEM	B.TECH	CEPCT404	Solid Mechanics	2018	✓		
26		B.TECH	MEPCT405	Materials Engineering	2018	✓	✓	
27		B.TECH	MEPCT406	Instrumentation and Control	2018	✓		✓
28		B.TECH	MEPCT407	Machine Drawing	2018	✓		✓
29		B.TECH	MEHST 408	Operations Research	2018	✓		
30		B.TECH	MEPCP409	Fuels and IC Engines Laboratory	2018	✓		
31	V SEM	B.TECH	MEPCT501	Heat Transfer	2018	✓		
32		B.TECH	MEPCT502	Design of Machine Elements	2018			✓
33		B.TECH	MEPCT504	Kinematics of Machinery	2018	✓		✓
34		B.TECH	MEPET505	Elective-I	2018	✓		✓
35		B.TECH	MEPCP507	Machine Tools and Automation Lab	2018	✓		✓
36		B.TECH	MEPCP508	Metrology Lab	2018	✓	✓	✓
37	VI SEM	B.TECH	EOHST601	Economics	2018		✓	
38		B.TECH	MEPCT602	Machine Design	2018			✓
39		B.TECH	MEPCT603	Dynamics of Machinery	2018	✓		✓
40		B.TECH	MEPET604	Elective-II	2018	✓		✓
41		B.TECH	MEPCP605	Strength of Materials & Fluid Mechanics Laboratory	2018	✓		✓
42		B.TECH	MEPCP606	Heat Transfer Laboratory	2018	✓		✓
43	VII SEM	B.TECH	MEOET607	Open Elective-I (MOOCS)	2018			✓
44		B.TECH	MEOET608	Open Elective-II (MOOCS)	2018			✓
45		B.TECH	MEPET701	Automobile Engineering	2018	✓		✓
46	VII SEM	B.TECH	MEPET702	Elective-III	2018			
47		B.TECH	MEPEP703	CAD / CAM Laboratory	2018	✓	✓	✓
48	VIII SEM	B.TECH	MEPET801	Elective -IV	2018			
49		B.TECH	MEPCP802	Project Work Phase-II	2018		✓	✓

50		B.TECH	MEOET803	Open Elective-III (MOOCS)	2018			✓
51		B.TECH	MEPET804	Open Elective-IV (MOOCS)	2018			✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MABST101	Mathematics-I	2018	36/51= 70.58%
2	B.TECH	CYBST102	Engineering Chemistry	2018	
3	B.TECH	EEEST104	Basic Electrical & Electronics Engineering	2018	
4	B.TECH	MEEST105	Engineering Graphics	2018	
5	B.TECH	MABST201	Mathematics-II	2018	
6	B.TECH	PYBST202	Engineering Physics	2018	
7	B.TECH	CSEST203	Programs for problem solving	2018	
8	B.TECH	MEEST204	Manufacturing Processes	2018	
9	B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	
10	B.TECH	CSESP206	Programs for problem solving Lab	2018	
11	B.TECH	CEMCT207	Environmental Science	2018	
12	B.TECH	MEPCT301	Thermodynamics	2018	
13	B.TECH	MEPCT303	Industrial safety and measures	2018	

14	B.TECH	CEEST304	Engineering Mechanics	2018
15	B.TECH	MEPCT305	Manufacturing Technology	2018
16	B.TECH	MEPCP309	Manufacturing Process Lab	2018
17	B.TECH	MEPCT402	Applied Thermodynamics	2018
18	B.TECH	CEPCT403	FluidMechanics & FluidMachines	2018
19	B.TECH	CEPCT404	Solid Mechanics	2018
20	B.TECH	MEPCT405	MaterialsEngineering	2018
21	B.TECH	MEPCT406	Instrumentation and Control	2018
22	B.TECH	MEPCT407	Machine Drawing	2018
23	B.TECH	MEHST 408	Operations Research	2018
24	B.TECH	MEPCP409	Fuels and IC Engines Laboratory	2018
25	B.TECH	MEPCT501	HeatTransfer	2018
26	B.TECH	MEPCT504	KinematicsofMachinery	2018
27	B.TECH	MEPET505	Elective-I	2018
28	B.TECH	MEPCP507	MachineToolsandAutomation Lab	2018
29	B.TECH	MEPCP508	Metrology Lab	2018
30	B.TECH	MEPCT603	Dynamics of Machinery	2018
31	B.TECH	MEPET604	Elective-II	2018
32	B.TECH	MEPCP605	Strength of Materials & Fluid MechanicsLaboratory	2018
33	B.TECH	MEPCP606	Heat Transfer Laboratory	2018
34	B.TECH	MEPET701	Automobile Engineering	2018
35	B.TECH	MEPET702	Elective-III	2018
36	B.TECH	MEPEP703	CAD / CAM Laboratory	2018

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	ENHST103	English	2018	10/51= 70.58%
2	B.TECH	ENHSP106	English Communications Lab	2018	
3	B.TECH	CEMCT207	Environmental Science	2018	
4	B.TECH	COHST306	Finance and Accounting	2018	
5	B.TECH	PAMCT401	ConstitutionofIndia	2018	
6	B.TECH	MEPCT405	MaterialsEngineering	2018	
7	B.TECH	MEPCP508	Metrology Lab	2018	
8	B.TECH	EOHST601	Economics	2018	
9	B.TECH	MEPEP703	CAD / CAM Laboratory	2018	
10	B.TECH	MEPCP802	Project Work Phase-II	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	MABST101	Mathematics–I	2018	35/51= 68.62%
2	B.TECH	CYBST102	Engineering Chemistry	2018	
3	B.TECH	ENHST103	English	2018	
4	B.TECH	EEEST104	BasicElectrical& Electronics Engineering	2018	
5	B.TECH	MEEST105	EngineeringGraphics	2018	
6	B.TECH	ENHSP106	English Communications Lab	2018	
7	B.TECH	MABST201	Mathematics–II	2018	
8	B.TECH	CSEST203	Programs for problem solving	2018	
9	B.TECH	MEESP205	Workshop/ Manufacturing Practice	2018	
10	B.TECH	CSESP206	Programs for problem solving Lab	2018	
11	B.TECH	MEPCT301	Thermodynamics	2018	
12	B.TECH	MABST302	Numerical Methods	2018	
13	B.TECH	COHST306	Finance and Accounting	2018	
14	B.TECH	MEPCT308	Advanced Engineering Graphics	2018	
15	B.TECH	MEPCP309	Manufacturing Process Lab	2018	
16	B.TECH	CEPCT403	FluidMechanics &FluidMachines	2018	

17	B.TECH	MEPCT406	Instrumentation and Control	2018
18	B.TECH	MEPCT407	Machine Drawing	2018
19	B.TECH	MEPCT502	Design of Machine Elements	2018
20	B.TECH	MEPCT504	Kinematics of Machinery	2018
21	B.TECH	MEPET505	Elective-I	2018
22	B.TECH	MEPCP507	Machine Tools and Automation Lab	2018
23	B.TECH	MEPCP508	Metrology Lab	2018
24	B.TECH	MEPCT602	Machine Design	2018
25	B.TECH	MEPCT603	Dynamics of Machinery	2018
26	B.TECH	MEPET604	Elective-II	2018
27	B.TECH	MEPCP605	Strength of Materials & Fluid Mechanics Laboratory	2018
28	B.TECH	MEPCP606	Heat Transfer Laboratory	2018
29	B.TECH	MEOET607	Open Elective-I (MOOCS)	2018
30	B.TECH	MEOET608	Open Elective-II (MOOCS)	2018
31	B.TECH	MEPET701	Automobile Engineering	2018
32	B.TECH	MEPEP703	CAD / CAM Laboratory	2018
33	B.TECH	MEPCP802	Project Work Phase-II	2018
34	B.TECH	MEOET803	Open Elective-III (MOOCS)	2018
35	B.TECH	MEPET804	Open Elective-IV (MOOCS)	2018

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

B.TECH MECHANICAL (2020-21)

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
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1	I SEM	B.TECH	MABST101	Mathematics-I	2020	✓		✓
2		B.TECH	CYBST102	Engg. Chemistry	2020	✓		✓
3		B.TECH	ENHST103	English	2020		✓	✓
4		B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	✓		✓
5		B.TECH	MEEST105	Engineering Graphics and Design	2020	✓		✓
6		B.TECH	ENHSP106	English Communication Lab	2020		✓	✓
7	II SEM	B.TECH	MABST201	Mathematics-II	2020	✓		✓
8		B.TECH	PYBST202	Engg. Physics	2020			✓
9		B.TECH	CSEST203	Programming for Problem Solving	2020	✓		✓
10		B.TECH	CEEST304	Engineering Mechanics	2020	✓		
11		B.TECH	MEESP205	Workshop/Manufacturing Practice	2020	✓		✓
12		B.TECH	CSESP206	Programming for Problem Solving Lab	2020	✓		✓
13	B.TECH	CEMCT207	Environmental Science	2020	✓	✓	✓	
14	III SEM	B.TECH	MA301B	Mathematics – III	2020	✓		✓
15		B.TECH	ME302C	Strength of Materials	2020	✓		✓
16		B.TECH	HS303C	Economics and Accountancy	2020	✓	✓	✓
17		B.TECH	ME304C	Manufacturing Processes	2020	✓		
18		B.TECH	ME305C	Basic Thermodynamics	2020	✓		
19		B.TECH	ME306L	Strength of Materials Lab	2020	✓		✓
20		B.TECH	ME307L	Manufacturing Process Lab	2020	✓		✓
21		B.TECH	ME308L	Fuels Lab	2020	✓		✓
22		B.TECH	ME309S	CAD	2020	✓	✓	✓
23		B.TECH	PA310AC	Constitution of India	2020		✓	
24		B.TECH	ME401C	Fluid Mechanics and Hydraulics	2020	✓		
25		B.TECH	ME402C	Kinematics of Machinery	2020			✓
26		B.TECH	ME403C	Applied Thermodynamics	2020	✓		

27	IV SEM	B.TECH	ME404C	Advanced Engineering graphics	2020	✓		✓
28		B.TECH	ME405C	Machine Tools and Metal Cutting	2020	✓		
29		B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020	✓		✓
30		B.TECH	ME407L	IC Engines Lab	2020	✓		✓
31		B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020	✓		✓
32		B.TECH	ME409S	MATLAB	2020	✓	✓	✓
33	V SEM	B.TECH	ME501	Design of Machine Elements	2020	✓		
34		B.TECH	ME502	Heat Transfer	2020	✓		
35		B.TECH	ME503	Machine Drawing	2020	✓	✓	✓
36		B.TECH		Open Elective	2020			
37		B.TECH		Professional Elective	2020			
38		B.TECH	ME506L	Machine Tools Lab	2020	✓		✓
39	B.TECH	ME507L	Heat Transfer Lab	2020	✓		✓	
40	B.TECH	ME508S	Finite Element Analysis	2020	✓		✓	
41	B.TECH	MC509	Mandatory Course (AICTE Suggested)	2020				
42	VI SEM	B.TECH	ME601	Machine Design	2020	✓		
43		B.TECH	ME602	Engineering Materials and Metallurgy	2020	✓		
44		B.TECH	ME603	Dynamics of Machinery	2020	✓		
45		B.TECH		Professional Elective	2020			
46		B.TECH		Open Elective	2020			
47		B.TECH	ME606L	Simulation Lab	2020	✓	✓	✓
48	B.TECH	ME607L	Dynamics Lab	2020	✓		✓	
49	B.TECH	ME608S	Metrology Lab	2020	✓		✓	
50	B.TECH	ME609S	CNC Programming	2020	✓	✓	✓	
51	VII SEM	B.TECH	ME701	Industrial Engineering and Management	2020	✓	✓	✓
52		B.TECH	ME702	Metrology and Instrumentation	2020	✓		
53		B.TECH	ME703	Operations Research	2020	✓	✓	
54		B.TECH		Professional Elective*	2020			
55		B.TECH		Open Elective *	2020			

56		B.TECH		Humanities and Social Sciences Elective *	2020	✓	✓	
57		B.TECH	ME707S	Robot Programming	2020	✓		✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MABST101	Mathematics-I	2020	
2	B.TECH	CYBST102	Engg. Chemistry	2020	
3	B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	
4	B.TECH	MEEST105	Engineering Graphics and Design	2020	
5	B.TECH	MABST201	Mathematics-II	2020	
6	B.TECH	CSEST203	Programming for Problem Solving	2020	

7	B.TECH	CEEST304	Engineering Mechanics	2020
8	B.TECH	MEESP205	Workshop/Manufacturing Practice	2020
9	B.TECH	CSESP206	Programming for Problem Solving Lab	2020
10	B.TECH	CEMCT207	Environmental Science	2020
11	B.TECH	MA301B	Mathematics – III	2020
12	B.TECH	ME302C	Strength of Materials	2020
13	B.TECH	HS303C	Economics and Accountancy	2020
14	B.TECH	ME304C	Manufacturing Processes	2020
15	B.TECH	ME305C	Basic Thermodynamics	2020
16	B.TECH	ME306L	Strength of Materials Lab	2020
17	B.TECH	ME307L	Manufacturing Process Lab	2020
18	B.TECH	ME308L	Fuels Lab	2020
19	B.TECH	ME309S	CAD	2020
20	B.TECH	ME401C	Fluid Mechanics and Hydraulics	2020
21	B.TECH	ME403C	Applied Thermodynamics	2020
22	B.TECH	ME404C	Advanced Engineering Graphics	2020
23	B.TECH	ME405C	Machine Tools and Metal Cutting	2020
24	B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020
25	B.TECH	ME407L	IC Engines Lab	2020
26	B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020
27	B.TECH	ME409S	M28ATLAB	2020
28	B.TECH	ME501	Design of Machine Elements	2020
29	B.TECH	ME502	Heat Transfer	2020
30	B.TECH	ME503	Machine Drawing	2020

46/57= 80.70%

31	B.TECH	ME506L	Machine Tools Lab	2020
32	B.TECH	ME507L	Heat Transfer Lab	2020
33	B.TECH	ME508S	Finite Element Analysis	2020
34	B.TECH	ME601	Machine Design	2020
35	B.TECH	ME602	Engineering Materials and Metallurgy	2020
36	B.TECH	ME603	Dynamics of Machinery	2020
37	B.TECH	ME606L	Simulation Lab	2020
38	B.TECH	ME607L	Dynamics Lab	2020
39	B.TECH	ME608S	Metrology Lab	2020
40	B.TECH	ME609S	CNC Programming	2020
41	B.TECH	ME701	Industrial Engineering and Management	2020
42	B.TECH	ME702	Metrology and Instrumentation	2020
43	B.TECH	ME703	Operations Research	2020
44	B.TECH		Professional Elective*	2020
45	B.TECH		Humanities and Social Sciences Elective *	2020
46	B.TECH	ME707S	Robot Programming	2020

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	ENHST103	English	2020	
2	B.TECH	ENHSP106	English Communication Lab	2020	
3	B.TECH	CEMCT207	Environmental Science	2020	

4	B.TECH	HS303C	Economics and Accountancy	2020	13/57= 22.80%
5	B.TECH	ME309S	CAD	2020	
6	B.TECH	PA310AC	Constitution of India	2020	
7	B.TECH	ME409S	MATLAB	2020	
8	B.TECH	ME503	Machine Drawing	2020	
9	B.TECH	ME606L	Simulation Lab	2020	
10	B.TECH	ME609S	CNC Programming	2020	
11	B.TECH	ME701	Industrial Engineering and Management	2020	
12	B.TECH	ME703	Operations Research	2020	
13	B.TECH		Humanities and Social Sciences Elective *	2020	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	MABST101	Mathematics-I	2020	
2	B.TECH	CYBST102	Engg. Chemistry	2020	
3	B.TECH	ENHST103	English	2020	
4	B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	
5	B.TECH	MEEST105	Engineering Graphics and Design	2020	
6	B.TECH	ENHSP106	English Communication Lab	2020	

7	B.TECH	MABST201	Mathematics-II	2020
8	B.TECH	PYBST202	Engg. Physics	2020
9	B.TECH	CSEST203	Programming for Problem Solving	2020
10	B.TECH	MEESP205	Workshop/Manufacturing Practice	2020
11	B.TECH	CSESP206	Programming for Problem Solving Lab	2020
12	B.TECH	CEMCT207	Environmental Science	2020
13	B.TECH	MA301B	Mathematics – III	2020
14	B.TECH	ME302C	Strength of Materials	2020
15	B.TECH	HS303C	Economics and Accountancy	2020
16	B.TECH	ME306L	Strength of Materials Lab	2020
17	B.TECH	ME307L	Manufacturing Process Lab	2020
18	B.TECH	ME308L	Fuels Lab	2020
19	B.TECH	ME309S	CAD	2020
20	B.TECH	ME402C	Kinematics of Machinery	2020
21	B.TECH	ME404C	Advanced Engineering Graphics	2020
22	B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020
23	B.TECH	ME407L	IC Engines Lab	2020
24	B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020
25	B.TECH	ME409S	MATLAB	2020
26	B.TECH	ME503	Machine Drawing	2020
27	B.TECH	ME506L	Machine Tools Lab	2020
28	B.TECH	ME507L	Heat Transfer Lab	2020
29	B.TECH	ME508S	Finite Element Analysis	2020
30	B.TECH	ME606L	Simulation Lab	2020
31	B.TECH	ME607L	Dynamics Lab	2020
32	B.TECH	ME608S	Metrology Lab	2020
33	B.TECH	ME609S	CNC Programming	2020

35/57= 61.40%

34	B.TECH	ME701	Industrial Engineering and Management	2020	
35	B.TECH	ME707S	Robot Programming	2020	

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

B.TECH MECHANICAL (2021-22)

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	B.TECH	MABST101	Mathematics-I	2020	✓	✓
2		B.TECH	CYBST102	Engg. Chemistry	2020	✓	✓
3		B.TECH	ENHST103	English	2020		✓
4		B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	✓	
5		B.TECH	MEEST105	Engineering Graphics and Design	2020	✓	
6		B.TECH	ENHSP106	English Communication Lab	2020		✓
7	II SEM	B.TECH	MABST201	Mathematics-II	2020	✓	✓
8		B.TECH	PYBST202	Engg. Physics	2020		✓
9		B.TECH	CSEST203	Programming for Problem Solving	2020	✓	
10		B.TECH	CEEST304	Engineering Mechanics	2020	✓	
11		B.TECH	MEESP205	Workshop/Manufacturing Practice	2020	✓	
12		B.TECH	CSESP206	Programming for Problem Solving Lab	2020	✓	
13		B.TECH	CEMCT207	Environmental Science	2020	✓	✓
14	III SEM	B.TECH	MA301B	Mathematics – III	2020	✓	✓
15		B.TECH	ME302C	Strength of Materials	2020	✓	✓
16		B.TECH	HS303C	Economics and Accountancy	2020	✓	✓
17		B.TECH	ME304C	Manufacturing Processes	2020	✓	
18		B.TECH	ME305C	Basic Thermodynamics	2020	✓	
19		B.TECH	ME306L	Strength of Materials Lab	2020	✓	

20		B.TECH	ME307L	Manufacturing Process Lab	2020	✓		✓
21		B.TECH	ME308L	Fuels Lab	2020	✓		✓
22		B.TECH	ME309S	CAD	2020	✓	✓	✓
23		B.TECH	PA310AC	Constitution of India	2020		✓	
24	IV SEM	B.TECH	ME401C	Fluid Mechanics and Hydraulics	2020	✓		
25		B.TECH	ME402C	Kinematics of Machinery	2020			✓
26		B.TECH	ME403C	Applied Thermodynamics	2020	✓		
27		B.TECH	ME404C	Advanced Engineering graphics	2020	✓		✓
28		B.TECH	ME405C	Machine Tools and Metal Cutting	2020	✓		
29		B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020	✓		✓
30		B.TECH	ME407L	IC Engines Lab	2020	✓		✓
31		B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020	✓		✓
32		B.TECH	ME409S	MATLAB	2020	✓	✓	✓
33		V SEM	B.TECH	ME501	Design of Machine Elements	2020	✓	
34	B.TECH		ME502	Heat Transfer	2020	✓		
35	B.TECH		ME503	Machine Drawing	2020	✓	✓	✓
36	B.TECH			Open Elective	2020			
37	B.TECH			Professional Elective	2020			
38	B.TECH		ME506L	Machine Tools Lab	2020	✓		✓
39	B.TECH		ME507L	Heat Transfer Lab	2020	✓		✓
40	B.TECH		ME508S	Finite Element Analysis	2020	✓		✓
41		B.TECH	MC509	Mandatory Course (AICTE Suggested)	2020			
42	VI SEM	B.TECH	ME601	Machine Design	2020	✓		
43		B.TECH	ME602	Engineering Materials and Metallurgy	2020	✓		
44		B.TECH	ME603	Dynamics of Machinery	2020	✓		
45		B.TECH		Professional Elective	2020			
46		B.TECH		Open Elective	2020			

47		B.TECH	ME606L	Simulation Lab	2020	✓	✓	✓
48		B.TECH	ME607L	Dynamics Lab	2020	✓		✓
49		B.TECH	ME608S	Metrology Lab	2020	✓		✓
50		B.TECH	ME609S	CNC Programming	2020	✓	✓	✓
51	VII SEM	B.TECH	ME701	Industrial Engineering and Management	2020	✓	✓	✓
52		B.TECH	ME702	Metrology and Instrumentation	2020	✓		
53		B.TECH	ME703	Operations Research	2020	✓	✓	
54		B.TECH		Professional Elective*	2020			
55		B.TECH		Open Elective *	2020			
56		B.TECH		Humanities and Social Sciences Elective *	2020	✓	✓	
57		B.TECH	ME707S	Robot Programming	2020	✓		✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	B.TECH	MABST101	Mathematics-I	2020	46/57= 80.70%
2	B.TECH	CYBST102	Engg. Chemistry	2020	
3	B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	
4	B.TECH	MEEST105	Engineering Graphics and Design	2020	
5	B.TECH	MABST201	Mathematics-II	2020	
6	B.TECH	CSEST203	Programming for Problem Solving	2020	
7	B.TECH	CEEST304	Engineering Mechanics	2020	
8	B.TECH	MEESP205	Workshop/Manufacturing Practice	2020	
9	B.TECH	CSESP206	Programming for Problem Solving Lab	2020	
10	B.TECH	CEMCT207	Environmental Science	2020	
11	B.TECH	MA301B	Mathematics – III	2020	
12	B.TECH	ME302C	Strength of Materials	2020	
13	B.TECH	HS303C	Economics and Accountancy	2020	
14	B.TECH	ME304C	Manufacturing Processes	2020	
15	B.TECH	ME305C	Basic Thermodynamics	2020	
16	B.TECH	ME306L	Strength of Materials Lab	2020	
17	B.TECH	ME307L	Manufacturing Process Lab	2020	
18	B.TECH	ME308L	Fuels Lab	2020	

19	B.TECH	ME309S	CAD	2020
20	B.TECH	ME401C	Fluid Mechanics and Hydraulics	2020
21	B.TECH	ME403C	Applied Thermodynamics	2020
22	B.TECH	ME404C	Advanced Engineering graphics	2020
23	B.TECH	ME405C	Machine Tools and Metal Cutting	2020
24	B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020
25	B.TECH	ME407L	IC Engines Lab	2020
26	B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020
27	B.TECH	ME409S	M28ATLAB	2020
28	B.TECH	ME501	Desi29gn of Machine Elements	2020
29	B.TECH	ME502	Heat Transfer	2020
30	B.TECH	ME503	Machine Drawing	2020
31	B.TECH	ME506L	Machine Tools Lab	2020
32	B.TECH	ME507L	Heat Transfer Lab	2020
33	B.TECH	ME508S	Finite Element Analysis	2020
34	B.TECH	ME601	Machine Design	2020
35	B.TECH	ME602	Engineering Materials and Metallurgy	2020
36	B.TECH	ME603	Dynamics of Machinery	2020
37	B.TECH	ME606L	Simulation Lab	2020
38	B.TECH	ME607L	Dynamics Lab	2020
39	B.TECH	ME608S	Metrology Lab	2020
40	B.TECH	ME609S	CNC Programming	2020
41	B.TECH	ME701	Industrial Engineering and Management	2020
42	B.TECH	ME702	Metrology and Instrumentation	2020
43	B.TECH	ME703	Operations Research	2020
44	B.TECH		Professional Elective*	2020
45	B.TECH		Humanities and Social Sciences Elective *	2020

46	B.TECH	ME707S	Robot Programming	2020
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1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	B.TECH	ENHST103	English	2020	13/57= 22.80%
2	B.TECH	ENHSP106	English Communication Lab	2020	
3	B.TECH	CEMCT207	Environmental Science	2020	
4	B.TECH	HS303C	Economics and Accountancy	2020	
5	B.TECH	ME309S	CAD	2020	
6	B.TECH	PA310AC	Constitution of India	2020	
7	B.TECH	ME409S	MATLAB	2020	
8	B.TECH	ME503	Machine Drawing	2020	
9	B.TECH	ME606L	Simulation Lab	2020	
10	B.TECH	ME609S	CNC Programming	2020	
11	B.TECH	ME701	Industrial Engineering and Management	2020	
12	B.TECH	ME703	Operations Research	2020	
13	B.TECH		Humanities and Social Sciences Elective *	2020	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	B.TECH	MABST101	Mathematics-I	2020	35/57= 61.40%
2	B.TECH	CYBST102	Engg. Chemistry	2020	
3	B.TECH	ENHST103	English	2020	
4	B.TECH	EEEST104	Basic Electrical and Electrical ngg.	2020	
5	B.TECH	MEEST105	Engineering Graphics and Design	2020	
6	B.TECH	ENHSP106	English Communication Lab	2020	
7	B.TECH	MABST201	Mathematics-II	2020	
8	B.TECH	PYBST202	Engg. Physics	2020	
9	B.TECH	CSEST203	Programming for Problem Solving	2020	
10	B.TECH	MEESP205	Workshop/Manufacturing Practice	2020	
11	B.TECH	CSESP206	Programming for Problem Solving Lab	2020	
12	B.TECH	CEMCT207	Environmental Science	2020	
13	B.TECH	MA301B	Mathematics – III	2020	
14	B.TECH	ME302C	Strength of Materials	2020	
15	B.TECH	HS303C	Economics and Accountancy	2020	
16	B.TECH	ME306L	Strength of Materials Lab	2020	
17	B.TECH	ME307L	Manufacturing Process Lab	2020	
18	B.TECH	ME308L	Fuels Lab	2020	
19	B.TECH	ME309S	CAD	2020	

20	B.TECH	ME402C	Kinematics of Machinery	2020
21	B.TECH	ME404C	Advanced Engineering Graphics	2020
22	B.TECH	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020
23	B.TECH	ME407L	IC Engines Lab	2020
24	B.TECH	ME408L	Electronics and Electrical Engineering Lab	2020
25	B.TECH	ME409S	MATLAB	2020
26	B.TECH	ME503	Machine Drawing	2020
27	B.TECH	ME506L	Machine Tools Lab	2020
28	B.TECH	ME507L	Heat Transfer Lab	2020
29	B.TECH	ME508S	Finite Element Analysis	2020
30	B.TECH	ME606L	Simulation Lab	2020
31	B.TECH	ME607L	Dynamics Lab	2020
32	B.TECH	ME608S	Metrology Lab	2020
33	B.TECH	ME609S	CNC Programming	2020
34	B.TECH	ME701	Industrial Engineering and Management	2020
35	B.TECH	ME707S	Robot Programming	2020

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				

	MA101	Mathematics – I	2020	apply differential equations to engineering problems.
	CY 102	Engineering Chemistry	2020	analyze microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
	EN103	English	2020	develop the language skills like listening, speaking, reading and writing
	EE104	Basic Electrical and Electronics Engineering	2020	understand the concept of power factor improvement for industrial installations and concepts of most economical power factor
	ME105	Engineering Graphics and Design	2020	make a distinction between first angle projection and third angle projection of drawing.
	EN 106	English Communication Lab	2020	The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills
II Semester				
	MA201	Mathematics – II	2020	Acquire knowledge about the physical interpretation of the gradient, divergence and curl

	PY 202	Engineering Physics	2020	Able to demonstrate competency and understanding of the concepts found in Mechanics, Harmonic Oscillations, Waves in one dimension, wave Optics, Lasers, and a broad base of knowledge in physics
	CS 203	Programming for Problem Solving	2020	Able to discuss basic algorithmic analysis for simple algorithms; determine appropriate algorithmic approaches to a real world problems.
	CE 204	Engineering Mechanics	2020	apply the basic knowledge of force system.
	ME 205	Workshop / Manufacturing Practices	2020	Design and develop different types of wood joints based on the requirement
	CS206	Programming for Problem Solving Lab	2020	Able to develop programs for real world applications using Java
	CEMCT207	Environmental Science	2020	Able to understand the importance of the environment
III Semester				

	MA301B	Mathematics – III	2020	After the completion of course, students will be able to Understand the analyticity of complex functions and conformal mappings.
	ME302C	Strength of Materials	2020	Determine the stresses and strains in the members subjected to axial, bending and torsional loads
	HS303C	Managerial Economics and Accountancy	2020	Understand Macro Economic environment of the business and its impact on enterprise.
	ME304C	Manufacturing Processes	2020	Able to understand the basic concepts of manufacturing.
	ME305C	Basic Thermodynamics	2020	Students can evaluate changes in thermodynamic properties of substances
	ME306L	Strength of Materials Lab	2020	Apply knowledge of materials and structural elements to the analysis of simple structures.
	ME307L	Manufacturing Process Lab	2020	To impart knowledge of different types of machine tools and their constructional details like lathe, milling and shaping machines.
	ME308L	Fuels Lab		Analyze important fuel and lubricant properties for the application in specific exploitation conditions

	ME309S	CAD Laboratory		Draw complex geometries of machine components in sketcher mode.
		IV Semester		
	ME401C	Fluid Mechanics and Hydraulic Machinery	2020	Understand and analyze simple flow situations and solve fluid flow problems.
	ME402C	Kinematics of Machinery	2020	Understand the principles of kinematic pairs, chains and their classification, DOF, inversions, equivalent chains and planar mechanisms.
	ME403C	Applied Thermodynamics	2020	Understand the 1st law analysis of combustion reactions
	ME404C	Advanced Engineering Graphics	2020	Able to draw Projections of solids and Auxiliary projections of solids parallel to one plane perpendicular to both the planes
	ME405C	Machine Tools and Metal Cutting	2020	Able to understand the basic concepts of metal cutting and basic machine tools of workshop practice.
	ME406L	Fluid Mechanics and Hydraulic Machinery Lab	2020	Able to calculate loss coefficients for use in the pipe flow analysis.

	ME407L	IC Engines Lab	2020	Estimate energy distribution by conducting heat balance test on IC engines
	ME408L	Electronics and Electrical Engineering Lab	2020	Understand the construction, operating principle and characteristics of DC machine, single phase transformer and three phase induction motor.
	ME409S	MATLAB	2020	Use MATLAB effectively to analyze and visualize data

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH (2016-17) :

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	✓		✓
2	M.TECH (PE)	MEPE T01	Advanced Materials Technology	2016	✓		
3	M.TECH (PE)	MEPE T02	Advanced Manufacturing Processes	2016	✓		

4	I SEM	M.TECH (PE)	MEIE T03	Operations Planning and Control *	2016			✓	
5		M.TECH (PE)	PECP 01	Production Engineering Lab	2016	✓		✓	
6	II SEM	M.TECH (PE)	MEPE T03	Computer Integrated Manufacturing	2016	✓			
7		M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	✓		✓	
8		M.TECH (PE)	MEPE T05	Additive Manufacturing	2016	✓			
9		M.TECH (PE)	MEPE T06	Metal Cutting and Cutting Tool Design	2016	✓			
10		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016	✓		✓	
11		M.TECH (PE)	PECP 04	CAD Lab	2016	✓	✓	✓	
12		I SEM	M.TECH (IE)	MAME T01	Applied Probability and Statistics *	2016	✓		
13			M.TECH (IE)	MEIE T01	Operations Research	2016	✓	✓	✓
14	M.TECH (IE)		MEIE T02	Work System Design	2016		✓		
15	M.TECH (IE)		MEIE T03	Operations Planning and Control *	2016			✓	
16	M.TECH (IE)		IECP 01	Industrial Engineering Lab	2016	✓	✓		
17	M.TECH (IE)		MEIE T04	Supply Chain Management	2016	✓	✓		
18	M.TECH (IE)		MEIE T05	Quality Control and Reliability Engineering	2016	✓		✓	
19	M.TECH (IE)		MEIE T06	Human Resources Management	2016		✓		
20	II SEM	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	✓	✓	✓	
21		M.TECH (IE)	IECP 04	Simulation Lab	2016			✓	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years

1	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	16/21= 76.19%
2	M.TECH (PE)	MEPE T01	Advanced Materials Technology	2016	
3	M.TECH (PE)	MEPE T02	Advanced Manufacturing Processes	2016	
4	M.TECH (PE)	PECP 01	Production Engineering Lab	2016	
5	M.TECH (PE)	MEPE T03	Computer Integrated Manufacturing	2016	
6	M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	
7	M.TECH (PE)	MEPE T05	Additive Manufacturing	2016	
8	M.TECH (PE)	MEPE T06	Metal Cutting and Cutting Tool Design	2016	
9	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016	
10	M.TECH (PE)	PECP 04	CAD Lab	2016	
11	M.TECH (IE)	MAME T01	Applied Probability and Statistics *	2016	
12	M.TECH (IE)	MEIE T01	Operations Research	2016	
13	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	
14	M.TECH (IE)	MEIE T04	Supply Chain Management	2016	
15	M.TECH (IE)	MEIE T05	Quality Control and Reliability Engineering	2016	
16	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	M.TECH (PE)	PECP 04	CAD Lab	2016	07/21= 33.33%
2	M.TECH (IE)	MEIE T01	Operations Research	2016	
3	M.TECH (IE)	MEIE T02	Work System Design	2016	
4	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	

5	M.TECH (IE)	MEIE T04	Supply Chain Management	2016
6	M.TECH (IE)	MEIE T06	Human Resources Management	2016
7	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	12/21= 57.14%
2	M.TECH (PE)	MEIE T03	Operations Planning and Control *	2016	
3	M.TECH (PE)	PECP 01	Production Engineering Lab	2016	
4	M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016	
6	M.TECH (PE)	PECP 04	CAD Lab	2016	
7	M.TECH (IE)	MEIE T01	Operations Research	2016	
8	M.TECH (IE)	MEIE T03	Operations Planning and Control *	2016	
9	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	
10	M.TECH (IE)	MEIE T05	Quality Control and Reliability Engineering	2016	
11	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	
12	M.TECH (IE)	IECP 04	Simulation Lab	2016	

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAME T01	Applied Probability and Statistics	2016	Basic concepts of sampling applied in population enumeration.
	MEIE T01	Operations Research	2016	Concepts of queuing systems in real life situations and model for analysis.
	MEIE T02	Work System Design	2016	Work study principle and design effective work layout for minimal hand and body motions
	MEIE T03	Operations Planning and Control	2016	Forecasting principles and techniques for short range and long range planning
	MEIE P01	Industrial Engineering Lab	2016	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
II Semester				
	MEIE T04	Supply Chain Management	2016	Managerial decision plans for effective implementation with competitive supplies
	MEIE T05	Quality Control and Reliability Engineering	2016	Able to maintain quality in products using quality circle principles

	MEIE T06	Human Resources Management	2016	Identify and evaluate key organisational approaches to improving HR outcomes for both the organisation and its employees
	MEIE T07	Advanced Operations Research	2016	Able to solve Un-constrained and constrained minimization problems using programming methods.
	MEIE P02	Simulation Lab	2016	Able to understand the basic programming knowledge with respect to domain

M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAME T01	Applied Probability and Statistics	2016	Basic concepts of sampling applied in population enumeration.
	MEPE T01	Advanced Materials Technology	2016	They will be able to compare the types of newer materials along with their properties and applications.

	MEPE T02	Advanced Manufacturing Processes	2016	Able to test the influence of different process parameters on the performance and their applications
	MEIE T03	Operations Planning and Control	2016	Forecasting principles and techniques for short range and long range planning
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2016	Understand the effect of manufacturing automation strategies and derive production metrics
	MEPE T04	Automation in Manufacturing	2016	Understand the different automated material handling, storage and retrieval systems and automated inspection systems
	MEPE T05	Additive Manufacturing	2016	Identify the need for time compression in product development and manufacturing.

	MEPE T06	Metal Cutting and Cutting Tool Design	2016	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE P02	CAD / CAM Laboratory	2016	Knowing the programme for transformation of mathematical matrices for translation, rotation, scaling and mirror reflection

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH (2017-18) :

S. No.		Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	✓		✓
2		M.TECH (PE)	MEPE T01	Advanced Materials Technology	2016	✓		
3		M.TECH (PE)	MEPE T02	Advanced Manufacturing Processes	2016	✓		
4		M.TECH (PE)	MEIE T03	Operations Planning and Control *	2016			✓
5		M.TECH (PE)	PECP 01	Production Engineering Lab	2016	✓		✓
6	II SEM	M.TECH (PE)	MEPE T03	Computer Integrated Manufacturing	2016	✓		
7		M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	✓		✓
8		M.TECH (PE)	MEPE T05	Additive Manufacturing	2016	✓		
9		M.TECH (PE)	MEPE T06	Metal Cutting and Cutting Tool Design	2016	✓		
10		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016	✓		✓

11		M.TECH (PE)	PECP 04	CAD Lab	2016	✓	✓	✓
12	I SEM	M.TECH (IE)	MAME T01	Applied Probability and Statistics *	2016	✓		
13		M.TECH (IE)	MEIE T01	Operations Research	2016	✓	✓	✓
14		M.TECH (IE)	MEIE T02	Work System Design	2016		✓	
15		M.TECH (IE)	MEIE T03	Operations Planning and Control *	2016			✓
16		M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	✓	✓	
17		M.TECH (IE)	MEIE T04	Supply Chain Management	2016	✓	✓	
18	II SEM	M.TECH (IE)	MEIE T05	Quality Control and Reliability Engineering	2016	✓		✓
19		M.TECH (IE)	MEIE T06	Human Resources Management	2016		✓	
20		M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	✓	✓	✓
21		M.TECH (IE)	IECP 04	Simulation Lab	2016			✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	16/21= 76.19%
2	M.TECH (PE)	MEPE T01	Advanced Materials Technology	2016	
3	M.TECH (PE)	MEPE T02	Advanced Manufacturing Processes	2016	
4	M.TECH (PE)	PECP 01	Production Engineering Lab	2016	
5	M.TECH (PE)	MEPE T03	Computer Integrated Manufacturing	2016	
6	M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	

7	M.TECH (PE)	MEPE T05	Additive Manufacturing	2016
8	M.TECH (PE)	MEPE T06	Metal Cutting and Cutting Tool Design	2016
9	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016
10	M.TECH (PE)	PECP 04	CAD Lab	2016
11	M.TECH (IE)	MAME T01	Applied Probability and Statistics *	2016
12	M.TECH (IE)	MEIE T01	Operations Research	2016
13	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016
14	M.TECH (IE)	MEIE T04	Supply Chain Management	2016
15	M.TECH (IE)	MEIE T05	Quality Control and Reliability Engineering	2016
16	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	M.TECH (PE)	PECP 04	CAD Lab	2016	07/21= 33.33%
2	M.TECH (IE)	MEIE T01	Operations Research	2016	
3	M.TECH (IE)	MEIE T02	Work System Design	2016	
4	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	
5	M.TECH (IE)	MEIE T04	Supply Chain Management	2016	
6	M.TECH (IE)	MEIE T06	Human Resources Management	2016	
7	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	M.TECH (PE)	MAME T01	Applied Probability and Statistics *	2016	12/21= 57.14%
2	M.TECH (PE)	MEIE T03	Operations Planning and Control *	2016	
3	M.TECH (PE)	PECP 01	Production Engineering Lab	2016	
4	M.TECH (PE)	MEPE T04	Automation in Manufacturing	2016	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2016	
6	M.TECH (PE)	PECP 04	CAD Lab	2016	
7	M.TECH (IE)	MEIE T01	Operations Research	2016	
8	M.TECH (IE)	MEIE T03	Operations Planning and Control *	2016	
9	M.TECH (IE)	IECP 01	Industrial Engineering Lab	2016	
10	M.TECH (IE)	MEIE T05	Quality Control and Reliability Engineering	2016	
11	M.TECH (IE)	MEIE T07	Advanced Operations Research	2016	
12	M.TECH (IE)	IECP 04	Simulation Lab	2016	

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				

	MAME T01	Applied Probability and Statistics	2016	Basic concepts of sampling applied in population enumeration.
	MEIE T01	Operations Research	2016	Concepts of queuing systems in real life situations and model for analysis.
	MEIE T02	Work System Design	2016	Work study principle and design effective work layout for minimal hand and body motions
	MEIE T03	Operations Planning and Control	2016	Forecasting principles and techniques for short range and long range planning
	MEIE P01	Industrial Engineering Lab	2016	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
II Semester				
	MEIE T04	Supply Chain Management	2016	Managerial decision plans for effective implementation with competitive supplies
	MEIE T05	Quality Control and Reliability Engineering	2016	Able to maintain quality in products using quality circle principles
	MEIE T06	Human Resources Management	2016	Identify and evaluate key organisational approaches to improving HR outcomes for both the organisation and its employees

	MEIE T07	Advanced Operations Research	2016	Able to solve Un-constrained and constrained minimization problems using programming methods.
	MEIE P02	Simulation Lab	2016	Able to understand the basic programming knowledge with respect to domain

M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAME T01	Applied Probability and Statistics	2016	Basic concepts of sampling applied in population enumeration.
	MEPE T01	Advanced Materials Technology	2016	They will be able to compare the types of newer materials along with their properties and applications.

	MEPE T02	Advanced Manufacturing Processes	2016	Able to test the influence of different process parameters on the performance and their applications
	MEIE T03	Operations Planning and Control	2016	Forecasting principles and techniques for short range and long range planning
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2016	Understand the effect of manufacturing automation strategies and derive production metrics
	MEPE T04	Automation in Manufacturing	2016	Understand the different automated material handling, storage and retrieval systems and automated inspection systems
	MEPE T05	Additive Manufacturing	2016	Identify the need for time compression in product development and manufacturing.

	MEPE T06	Metal Cutting and Cutting Tool Design	2016	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE P02	CAD / CAM Laboratory	2016	Knowing the programme for transformation of mathematical matrices for translation, rotation, scaling and mirror reflection

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH 2018-19:

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	✓	
2		M.TECH (PE)	PEPC 02	Advanced material technology	2018	✓	
3		M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	✓	
4		M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	✓	✓
5		M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	✓	
6		M.TECH (PE)	PECP 02	CAD Lab	2018	✓	✓
7		M.TECH (PE)	PGMC 01	Research Methodology and IPR	2018		✓
8		M.TECH (PE)	PGPA 01	Audit Course-I	2018		
9		M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	✓	
10		M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	✓	

11	II SEM	M.TECH (PE)	PEPE 31	Automation Manufacturing	2018			✓
12		M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	✓		
13		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	✓		✓
14		M.TECH (PE)	PECP 04	CAM Lab – II	2018	✓	✓	✓
15		M.TECH (PE)	PGPA 02	Audit Course-II	2018			
16	III SEM	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	✓		
17		M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	✓	✓	✓
18		M.TECH (PE)	PGOP 12	Industrial Safety	2018	✓	✓	
19	I SEM	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	✓		
20		M.TECH (IE)	IEPC 02	Work System Design	2018	✓	✓	✓
21		M.TECH (IE)	IEPE 13	Human Resource Management	2018		✓	
22		M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	✓		✓
23		M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	✓	✓	
24		M.TECH (IE)	IECP 02	Simulation Lab - I	2018	✓		✓
25		M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	✓	✓	
26		M.TECH (IE)	PGPA 01	Audit Course-I	2018			
27	II SEM	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	✓		
28		M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	✓		✓
29		M.TECH (IE)	IEPE 31	Supply Chain Management	2018	✓	✓	✓
30		M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018		✓	
31		M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	✓	✓	✓
32		M.TECH (IE)	IECP 04	Simulation Lab - I	2018			✓
33		M.TECH (IE)	PGPA 02	Audit Course-II	2018			
34	III SEM	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	✓		✓
35		M.TECH (IE)	IEPE 52	System Dynamics	2018	✓		
36		M.TECH (IE)	PGOP 12	Industrial Safety	2018	✓	✓	✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	27/36= 75.00%
2	M.TECH (PE)	PEPC 02	Advanced material technology	2018	
3	M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	
4	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	
5	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
6	M.TECH (PE)	PECP 02	CAD Lab	2018	
7	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	
8	M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	
9	M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	
10	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
11	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
12	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	
13	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
14	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
15	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	
16	M.TECH (IE)	IEPC 02	Work System Design	2018	

17	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018
18	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018
19	M.TECH (IE)	IECP 02	Simulation Lab - I	2018
20	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018
21	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018
22	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018
23	M.TECH (IE)	IEPE 31	Supply Chain Management	2018
24	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018
25	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018
26	M.TECH (IE)	IEPE 52	System Dynamics	2018
27	M.TECH (IE)	PGOP 12	Industrial Safety	2018

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	M.TECH (PE)	PECP 02	CAD Lab	2018	12/36= 33.33%
2	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
3	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
4	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
5	M.TECH (IE)	IEPC 02	Work System Design	2018	
6	M.TECH (IE)	IEPE 13	Human Resource Management	2018	
7	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
8	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
9	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
10	M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018	
11	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
12	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	16/36= 44.44%
2	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
3	M.TECH (PE)	PECP 02	CAD Lab	2018	
4	M.TECH (PE)	PEPE 31	Automation Manufacturing	2018	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
6	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
7	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
8	M.TECH (IE)	IEPC 02	Work System Design	2018	
9	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
10	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	
11	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	
12	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
13	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
14	M.TECH (IE)	IECP 04	Simulation Lab - I	2018	

15	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	
16	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	IEPC 01	Operations Planning and Control	2018	Forecasting principles and techniques for short range and long range planning
	IEPC 02	Work System Design	2018	Work study principle and design effective work layout for minimal hand and body motions.
	IEPE 11	Applied Probability and Statistics	2018	Basic concepts of sampling applied in population enumeration
	IEPE 12	Financial Management & Control	2018	Clearly understand the cost management discipline and process

	IEPE 13	Human Resource Management	2018	Critically analyse and apply the emerging strategic role that HRM plays in a changing business environment and workplace to maintain current policies and procedures
	IEPE 21	Design for Manufacturing	2018	Design components for machining
	IECP 01	Industrial Engineering Lab-I	2018	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
	IECP 02	Simulation Lab - I	2018	Able to understand the basic programming knowledge with respect to domain.
II Semester				
	IEPC 03	Advanced Operation Research	2018	Able to solve Un-constrained and constrained minimization problems using programming methods.
	IEPC 04	Quality Control and Reliability Engineering	2018	Able to apply statistical methods to accept the lot of samples
	IEPE 31	Supply Chain Management	2018	Managerial decision plans for effective implementation with competitive supplies
	IEPE 41	Productivity Engineering & Management	2018	Identification and formulation productivity measurement at national level with diversity concepts

	IEPE 42	Logistics Engineering & Management	2018	An ability to apply the knowledge, techniques, skills, and modern tools of the discipline to Engineering Logistics technology;
	IEPE 43	Service Engineering & Management	2018	Able to acquire knowledge on focusing on customer and service management
	IECP 03	Industrial Engineering Lab-II	2018	Understand the forecasting techniques
	IECP 04	Simulation Lab - II	2018	Understand the solving of sequencing and assignment problem
III semester				
	IEPE 51	Design and Analysis of Experiments	2018	Develop appropriate experimental design to conduct experiments for a given
	IEPE 52	System Dynamics	2018	Ability to develop students' skills in analyzing, simulating, and identifying dynamic systems based upon their input-output responses.

M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				

	PEPC 01	Advanced Manufacturing Processes	2018	Able to test the influence of different process parameters on the performance and their applications
	PEPC 02	Advanced material technology	2018	They will be able to compare the types of newer materials along with their properties and applications.
	PEPE 13	Advanced Casting Technology	2018	Knowing and identification of materials for moulding the additives, coating and the methods of sand controls
	PEPE 22	Design for Manufacturing	2018	Design components for sheet metal work by understanding in depth the sheet metal processes and their formation mechanisms
	PECP 01	Production Engineering Lab – I	2018	Apply knowledge of metal cutting to perform various machining operations
	PECP 02	CAD Lab	2018	Create complex engineering assemblies using appropriate assembly constraints
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2018	Understand the effect of manufacturing automation strategies and derive production metrics.

	MEPE T06	Metal Cutting and Cutting Tool Design	2018	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE T04	Automation in Manufacturing	2018	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.
	PEPE 43	Oil Hydraulics and Pneumatics	2018	Identify and analyze the functional requirements of a power transmission system for a given application.
	PECP 03	Production Engineering Lab-II	2018	Apply knowledge of metal cutting to perform various machining operations.
	PECP 04	CAM Lab - II	2018	Create complex engineering assemblies using appropriate assembly constraints

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH 2019-20:

S. No.		Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	✓		
2		M.TECH (PE)	PEPC 02	Advanced material technology	2018	✓		
3		M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	✓		
4		M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	✓		✓
5		M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	✓		✓
6		M.TECH (PE)	PECP 02	CAD Lab	2018	✓	✓	✓
7		M.TECH (PE)	PGMC 01	Research Methodology and IPR	2018		✓	
8		M.TECH (PE)	PGPA 01	Audit Course-I	2018			
9	II SEM	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	✓		
10		M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	✓		
11		M.TECH (PE)	PEPE 31	Automation Manufacturing	2018			✓
12		M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	✓		
13		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	✓		✓
14		M.TECH (PE)	PECP 04	CAM Lab – II	2018	✓	✓	✓
15		M.TECH (PE)	PGPA 02	Audit Course-II	2018			
16	III SEM	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	✓		
17		M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	✓	✓	✓
18		M.TECH (PE)	PGOP 12	Industrial Safety	2018	✓	✓	
19	I SEM	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	✓		
20		M.TECH (IE)	IEPC 02	Work System Design	2018	✓	✓	✓
21		M.TECH (IE)	IEPE 13	Human Resource Management	2018		✓	
22		M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	✓		✓
23		M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	✓	✓	
24		M.TECH (IE)	IECP 02	Simulation Lab - I	2018	✓		✓
25		M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	✓	✓	
26		M.TECH (IE)	PGPA 01	Audit Course-I	2018			

27	II SEM	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	✓		
28		M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	✓		✓
29		M.TECH (IE)	IEPE 31	Supply Chain Management	2018	✓	✓	✓
30		M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018		✓	
31		M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	✓	✓	✓
32		M.TECH (IE)	IECP 04	Simulation Lab - I	2018			✓
33		M.TECH (IE)	PGPA 02	Audit Course-II	2018			
34	III SEM	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	✓		✓
35		M.TECH (IE)	IEPE 52	System Dynamics	2018	✓		
36		M.TECH (IE)	PGOP 12	Industrial Safety	2018	✓	✓	✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	

2	M.TECH (PE)	PEPC 02	Advanced material technology	2018	27/36= 75.00%
3	M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	
4	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	
5	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
6	M.TECH (PE)	PECP 02	CAD Lab	2018	
7	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	
8	M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	
9	M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	
10	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
11	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
12	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	
13	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
14	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
15	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	
16	M.TECH (IE)	IEPC 02	Work System Design	2018	
17	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
18	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
19	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	
20	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
21	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	
22	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	
23	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
24	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
25	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	
26	M.TECH (IE)	IEPE 52	System Dynamics	2018	
27	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	M.TECH (PE)	PECP 02	CAD Lab	2018	12/36= 33.33%
2	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
3	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
4	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
5	M.TECH (IE)	IEPC 02	Work System Design	2018	
6	M.TECH (IE)	IEPE 13	Human Resource Management	2018	
7	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
8	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
9	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
10	M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018	
11	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
12	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	16/36= 44.44%
2	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
3	M.TECH (PE)	PECP 02	CAD Lab	2018	
4	M.TECH (PE)	PEPE 31	Automation Manufacturing	2018	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
6	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
7	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
8	M.TECH (IE)	IEPC 02	Work System Design	2018	
9	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
10	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	
11	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	
12	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
13	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
14	M.TECH (IE)	IECP 04	Simulation Lab - I	2018	
15	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	
16	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	IEPC 01	Operations Planning and Control	2018	Forecasting principles and techniques for short range and long range planning
	IEPC 02	Work System Design	2018	Work study principle and design effective work layout for minimal hand and body motions.
	IEPE 11	Applied Probability and Statistics	2018	Basic concepts of sampling applied in population enumeration
	IEPE 12	Financial Management & Control	2018	Clearly understand the cost management discipline and process
	IEPE 13	Human Resource Management	2018	Critically analyse and apply the emerging strategic role that HRM plays in a changing business environment and workplace to maintain current policies and procedures
	IEPE 21	Design for Manufacturing	2018	Design components for machining

	IECP 01	Industrial Engineering Lab-I	2018	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
	IECP 02	Simulation Lab - I	2018	Able to understand the basic programming knowledge with respect to domain.
II Semester				
	IEPC 03	Advanced Operation Research	2018	Able to solve Un-constrained and constrained minimization problems using programming methods.
	IEPC 04	Quality Control and Reliability Engineering	2018	Able to apply statistical methods to accept the lot of samples
	IEPE 31	Supply Chain Management	2018	Managerial decision plans for effective implementation with competitive supplies
	IEPE 41	Productivity Engineering & Management	2018	Identification and formulation productivity measurement at national level with diversity concepts
	IEPE 42	Logistics Engineering & Management	2018	An ability to apply the knowledge, techniques, skills, and modern tools of the discipline to Engineering Logistics technology;

	IEPE 43	Service Engineering & Management	2018	Able to acquire knowledge on focusing on customer and service management
	IECP 03	Industrial Engineering Lab-II	2018	Understand the forecasting techniques
	IECP 04	Simulation Lab - II	2018	Understand the solving of sequencing and assignment problem
III semester				
	IEPE 51	Design and Analysis of Experiments	2018	Develop appropriate experimental design to conduct experiments for a given
	IEPE 52	System Dynamics	2018	Ability to develop students' skills in analyzing, simulating, and identifying dynamic systems based upon their input-output responses.

M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	PEPC 01	Advanced Manufacturing Processes	2018	Able to test the influence of different process parameters on the performance and their applications

	PEPC 02	Advanced material technology	2018	They will be able to compare the types of newer materials along with their properties and applications.
	PEPE 13	Advanced Casting Technology	2018	Knowing and identification of materials for moulding the additives, coating and the methods of sand controls
	PEPE 22	Design for Manufacturing	2018	Design components for sheet metal work by understanding in depth the sheet metal processes and their formation mechanisms
	PECP 01	Production Engineering Lab – I	2018	Apply knowledge of metal cutting to perform various machining operations
	PECP 02	CAD Lab	2018	Create complex engineering assemblies using appropriate assembly constraints
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2018	Understand the effect of manufacturing automation strategies and derive production metrics.

	MEPE T06	Metal Cutting and Cutting Tool Design	2018	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE T04	Automation in Manufacturing	2018	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.
	PEPE 43	Oil Hydraulics and Pneumatics	2018	Identify and analyze the functional requirements of a power transmission system for a given application.
	PECP 03	Production Engineering Lab-II	2018	Apply knowledge of metal cutting to perform various machining operations.
	PECP 04	CAM Lab - II	2018	Create complex engineering assemblies using appropriate assembly constraints

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH 2020-21:

S. No.		Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	I SEM	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	✓		
2		M.TECH (PE)	PEPC 02	Advanced material technology	2018	✓		
3		M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	✓		
4		M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	✓		✓
5		M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	✓		✓
6		M.TECH (PE)	PECP 02	CAD Lab	2018	✓	✓	✓
7		M.TECH (PE)	PGMC 01	Research Methodology and IPR	2018		✓	
8		M.TECH (PE)	PGPA 01	Audit Course-I	2018			
9	II SEM	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	✓		
10		M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	✓		
11		M.TECH (PE)	PEPE 31	Automation Manufacturing	2018			✓
12		M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	✓		
13		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	✓		✓
14		M.TECH (PE)	PECP 04	CAM Lab – II	2018	✓	✓	✓
15	M.TECH (PE)	PGPA 02	Audit Course-II	2018				
16	III SEM	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	✓		
17		M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	✓	✓	✓
18		M.TECH (PE)	PGOP 12	Industrial Safety	2018	✓	✓	
19	I SEM	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	✓		
20		M.TECH (IE)	IEPC 02	Work System Design	2018	✓	✓	✓
21		M.TECH (IE)	IEPE 13	Human Resource Management	2018		✓	
22		M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	✓		✓
23		M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	✓	✓	
24		M.TECH (IE)	IECP 02	Simulation Lab - I	2018	✓		✓
25		M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	✓	✓	
26		M.TECH (IE)	PGPA 01	Audit Course-I	2018			
27		M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	✓		

28	II SEM	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	✓		✓
29		M.TECH (IE)	IEPE 31	Supply Chain Management	2018	✓	✓	✓
30		M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018		✓	
31		M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	✓	✓	✓
32		M.TECH (IE)	IECP 04	Simulation Lab - I	2018			✓
33		M.TECH (IE)	PGPA 02	Audit Course-II	2018			
34	III SEM	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	✓		✓
35		M.TECH (IE)	IEPE 52	System Dynamics	2018	✓		
36		M.TECH (IE)	PGOP 12	Industrial Safety	2018	✓	✓	✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	
2	M.TECH (PE)	PEPC 02	Advanced material technology	2018	

3	M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	27/36= 75.00%
4	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	
5	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
6	M.TECH (PE)	PECP 02	CAD Lab	2018	
7	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	
8	M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	
9	M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	
10	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
11	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
12	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	
13	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
14	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
15	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	
16	M.TECH (IE)	IEPC 02	Work System Design	2018	
17	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
18	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
19	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	
20	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
21	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	
22	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	
23	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
24	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
25	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	
26	M.TECH (IE)	IEPE 52	System Dynamics	2018	
27	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship
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No.					during the last five years
1	M.TECH (PE)	PECP 02	CAD Lab	2018	12/36= 33.33%
2	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
3	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
4	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
5	M.TECH (IE)	IEPC 02	Work System Design	2018	
6	M.TECH (IE)	IEPE 13	Human Resource Management	2018	
7	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
8	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
9	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
10	M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018	
11	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
12	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years

1	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	16/36= 44.44%
2	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
3	M.TECH (PE)	PECP 02	CAD Lab	2018	
4	M.TECH (PE)	PEPE 31	Automation Manufacturing	2018	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
6	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
7	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
8	M.TECH (IE)	IEPC 02	Work System Design	2018	
9	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
10	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	
11	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	
12	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	
13	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	
14	M.TECH (IE)	IECP 04	Simulation Lab - I	2018	
15	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	
16	M.TECH (IE)	PGOP 12	Industrial Safety	2018	

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	IEPC 01	Operations Planning and Control	2018	Forecasting principles and techniques for short range and long range planning

	IEPC 02	Work System Design	2018	Work study principle and design effective work layout for minimal hand and body motions.
	IEPE 11	Applied Probability and Statistics	2018	Basic concepts of sampling applied in population enumeration
	IEPE 12	Financial Management & Control	2018	Clearly understand the cost management discipline and process
	IEPE 13	Human Resource Management	2018	Critically analyse and apply the emerging strategic role that HRM plays in a changing business environment and workplace to maintain current policies and procedures
	IEPE 21	Design for Manufacturing	2018	Design components for machining
	IECP 01	Industrial Engineering Lab-I	2018	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
	IECP 02	Simulation Lab - I	2018	Able to understand the basic programming knowledge with respect to domain.
II Semester				

	IEPC 03	Advanced Operation Research	2018	Able to solve Un-constrained and constrained minimization problems using programming methods.
	IEPC 04	Quality Control and Reliability Engineering	2018	Able to apply statistical methods to accept the lot of samples
	IEPE 31	Supply Chain Management	2018	Managerial decision plans for effective implementation with competitive supplies
	IEPE 41	Productivity Engineering & Management	2018	Identification and formulation productivity measurement at national level with diversity concepts
	IEPE 42	Logistics Engineering & Management	2018	An ability to apply the knowledge, techniques, skills, and modern tools of the discipline to Engineering Logistics technology;
	IEPE 43	Service Engineering & Management	2018	Able to acquire knowledge on focusing on customer and service management
	IECP 03	Industrial Engineering Lab-II	2018	Understand the forecasting techniques
	IECP 04	Simulation Lab - II	2018	Understand the solving of sequencing and assignment problem
III semester				
	IEPE 51	Design and Analysis of Experiments	2018	Develop appropriate experimental design to conduct experiments for a given

	IEPE 52	System Dynamics	2018	Ability to develop students' skills in analyzing, simulating, and identifying dynamic systems based upon their input-output responses.
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M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	PEPC 01	Advanced Manufacturing Processes	2018	Able to test the influence of different process parameters on the performance and their applications
	PEPC 02	Advanced material technology	2018	They will be able to compare the types of newer materials along with their properties and applications.
	PEPE 13	Advanced Casting Technology	2018	Knowing and identification of materials for moulding the additives, coating and the methods of sand controls

	PEPE 22	Design for Manufacturing	2018	Design components for sheet metal work by understanding in depth the sheet metal processes and their formation mechanisms
	PECP 01	Production Engineering Lab – I	2018	Apply knowledge of metal cutting to perform various machining operations
	PECP 02	CAD Lab	2018	Create complex engineering assemblies using appropriate assembly constraints
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2018	Understand the effect of manufacturing automation strategies and derive production metrics.
	MEPE T06	Metal Cutting and Cutting Tool Design	2018	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE T04	Automation in Manufacturing	2018	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.

	PEPE 43	Oil Hydraulics and Pneumatics	2018	Identify and analyze the functional requirements of a power transmission system for a given application.
	PECP 03	Production Engineering Lab-II	2018	Apply knowledge of metal cutting to perform various machining operations.
	PECP 04	CAM Lab - II	2018	Create complex engineering assemblies using appropriate assembly constraints

1.1.3. Employability / Entrepreneurship / Skill Development - Mapping

M.TECH 2021-22:

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	
1	I SEM	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	✓		
2		M.TECH (PE)	PEPC 02	Advanced material technology	2018	✓		
3		M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	✓		
4		M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	✓	✓	
5		M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	✓		✓
6		M.TECH (PE)	PECP 02	CAD Lab	2018	✓	✓	✓

7		M.TECH (PE)	PGMC 01	Research Methodology and IPR	2018		✓	
8		M.TECH (PE)	PGPA 01	Audit Course-I	2018			
9	II SEM	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	✓		
10		M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	✓		
11		M.TECH (PE)	PEPE 31	Automation Manufacturing	2018			✓
12		M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	✓		
13		M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	✓		✓
14		M.TECH (PE)	PECP 04	CAM Lab – II	2018	✓	✓	✓
15		M.TECH (PE)	PGPA 02	Audit Course-II	2018			
16		III SEM	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	✓	
17	M.TECH (PE)		PEPE 52	Expert Systems in Manufacturing	2018	✓	✓	✓
18	M.TECH (PE)		PGOP 12	Industrial Safety	2018	✓	✓	
19	I SEM	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018	✓		
20		M.TECH (IE)	IEPC 02	Work System Design	2018	✓	✓	✓
21		M.TECH (IE)	IEPE 13	Human Resource Management	2018		✓	
22		M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	✓		✓
23		M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	✓	✓	
24		M.TECH (IE)	IECP 02	Simulation Lab - I	2018	✓		✓
25		M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	✓	✓	
26		M.TECH (IE)	PGPA 01	Audit Course-I	2018			
27	II SEM	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018	✓		
28		M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018	✓		✓
29		M.TECH (IE)	IEPE 31	Supply Chain Management	2018	✓	✓	✓
30		M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018		✓	
31		M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018	✓	✓	✓
32		M.TECH (IE)	IECP 04	Simulation Lab - I	2018			✓
33		M.TECH (IE)	PGPA 02	Audit Course-II	2018			
34	III SEM	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018	✓		✓
35		M.TECH (IE)	IEPE 52	System Dynamics	2018	✓		
36		M.TECH (IE)	PGOP 12	Industrial Safety	2018	✓	✓	✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	M.TECH (PE)	PEPC 01	Advanced Manufacturing Processes	2018	27/36= 75.00%
2	M.TECH (PE)	PEPC 02	Advanced material technology	2018	
3	M.TECH (PE)	PEPE 13	Advanced Casting Technology	2018	
4	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	
5	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
6	M.TECH (PE)	PECP 02	CAD Lab	2018	
7	M.TECH (PE)	PEPC 03	Computer Integrated Manufacturing	2018	
8	M.TECH (PE)	PEPC 04	Metal Cutting Tool Design	2018	
9	M.TECH (PE)	PEPE 43	Oil Hydraulics and Pneumatics	2018	
10	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
11	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
12	M.TECH (PE)	PEPE 51	Finite Element Methods	2018	

13	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018
14	M.TECH (PE)	PGOP 12	Industrial Safety	2018
15	M.TECH (IE)	IEPC 01	Operations Planning and Control	2018
16	M.TECH (IE)	IEPC 02	Work System Design	2018
17	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018
18	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018
19	M.TECH (IE)	IECP 02	Simulation Lab - I	2018
20	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018
21	M.TECH (IE)	IEPC 03	Advanced Operation Research	2018
22	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018
23	M.TECH (IE)	IEPE 31	Supply Chain Management	2018
24	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018
25	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018
26	M.TECH (IE)	IEPE 52	System Dynamics	2018
27	M.TECH (IE)	PGOP 12	Industrial Safety	2018

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	M.TECH (PE)	PECP 02	CAD Lab	2018	12/36= 33.33%
2	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
3	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
4	M.TECH (PE)	PGOP 12	Industrial Safety	2018	
5	M.TECH (IE)	IEPC 02	Work System Design	2018	
6	M.TECH (IE)	IEPE 13	Human Resource Management	2018	
7	M.TECH (IE)	IECP 01	Industrial Engineering Lab-I	2018	
8	M.TECH (IE)	PGMC 01	Research Methodology and IPR	2018	
9	M.TECH (IE)	IEPE 31	Supply Chain Management	2018	

10	M.TECH (IE)	IEPE 41	Productivity Engineering & Management	2018
11	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018
12	M.TECH (IE)	PGOP 12	Industrial Safety	2018

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	M.TECH (PE)	PEPE 22	Design for Manufacturing	2018	16/36= 44.44%
2	M.TECH (PE)	PECP 01	Production Engineering Lab – I	2018	
3	M.TECH (PE)	PECP 02	CAD Lab	2018	
4	M.TECH (PE)	PEPE 31	Automation Manufacturing	2018	
5	M.TECH (PE)	PECP 03	Production Engineering Lab-II	2018	
6	M.TECH (PE)	PECP 04	CAM Lab – II	2018	
7	M.TECH (PE)	PEPE 52	Expert Systems in Manufacturing	2018	
8	M.TECH (IE)	IEPC 02	Work System Design	2018	
9	M.TECH (IE)	IEPE 21	Design for Manufacturing	2018	
10	M.TECH (IE)	IECP 02	Simulation Lab - I	2018	

11	M.TECH (IE)	IEPC 04	Quality Control and Reliability Engineering	2018
12	M.TECH (IE)	IEPE 31	Supply Chain Management	2018
13	M.TECH (IE)	IECP 03	Industrial Engineering Lab-I	2018
14	M.TECH (IE)	IECP 04	Simulation Lab - I	2018
15	M.TECH (IE)	IEPE 51	Design and Analysis of Experiments	2018
16	M.TECH (IE)	PGOP 12	Industrial Safety	2018

M.TECH (INDUSTRIAL ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	IEPC 01	Operations Planning and Control	2018	Forecasting principles and techniques for short range and long range planning
	IEPC 02	Work System Design	2018	Work study principle and design effective work layout for minimal hand and body motions.
	IEPE 11	Applied Probability and Statistics	2018	Basic concepts of sampling applied in population enumeration
	IEPE 12	Financial Management & Control	2018	Clearly understand the cost management discipline and process

	IEPE 13	Human Resource Management	2018	Critically analyse and apply the emerging strategic role that HRM plays in a changing business environment and workplace to maintain current policies and procedures
	IEPE 21	Design for Manufacturing	2018	Design components for machining
	IECP 01	Industrial Engineering Lab-I	2018	Understanding of reliable and flexible method to accomplish hectic task in minimum possible time.
	IECP 02	Simulation Lab - I	2018	Able to understand the basic programming knowledge with respect to domain.
II Semester				
	IEPC 03	Advanced Operation Research	2018	Able to solve Un-constrained and constrained minimization problems using programming methods.
	IEPC 04	Quality Control and Reliability Engineering	2018	Able to apply statistical methods to accept the lot of samples
	IEPE 31	Supply Chain Management	2018	Managerial decision plans for effective implementation with competitive supplies
	IEPE 41	Productivity Engineering & Management	2018	Identification and formulation productivity measurement at national level with diversity concepts

	IEPE 42	Logistics Engineering & Management	2018	An ability to apply the knowledge, techniques, skills, and modern tools of the discipline to Engineering Logistics technology;
	IEPE 43	Service Engineering & Management	2018	Able to acquire knowledge on focusing on customer and service management
	IECP 03	Industrial Engineering Lab-II	2018	Understand the forecasting techniques
	IECP 04	Simulation Lab - II	2018	Understand the solving of sequencing and assignment problem
III semester				
	IEPE 51	Design and Analysis of Experiments	2018	Develop appropriate experimental design to conduct experiments for a given
	IEPE 52	System Dynamics	2018	Ability to develop students' skills in analyzing, simulating, and identifying dynamic systems based upon their input-output responses.

M.TECH (PRODUCTION ENGINEERING)

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				

	PEPC 01	Advanced Manufacturing Processes	2018	Able to test the influence of different process parameters on the performance and their applications
	PEPC 02	Advanced material technology	2018	They will be able to compare the types of newer materials along with their properties and applications.
	PEPE 13	Advanced Casting Technology	2018	Knowing and identification of materials for moulding the additives, coating and the methods of sand controls
	PEPE 22	Design for Manufacturing	2018	Design components for sheet metal work by understanding in depth the sheet metal processes and their formation mechanisms
	PECP 01	Production Engineering Lab – I	2018	Apply knowledge of metal cutting to perform various machining operations
	PECP 02	CAD Lab	2018	Create complex engineering assemblies using appropriate assembly constraints
II Semester				
	MEPE T03	Computer Integrated Manufacturing	2018	Understand the effect of manufacturing automation strategies and derive production metrics.

	MEPE T06	Metal Cutting and Cutting Tool Design	2018	Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes
	MEPE T04	Automation in Manufacturing	2018	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.
	PEPE 43	Oil Hydraulics and Pneumatics	2018	Identify and analyze the functional requirements of a power transmission system for a given application.
	PECP 03	Production Engineering Lab-II	2018	Apply knowledge of metal cutting to perform various machining operations.
	PECP 04	CAM Lab - II	2018	Create complex engineering assemblies using appropriate assembly constraints

Electrical and Electronics Engineering

S. No.	Name of the Programme	Course Code	Title of the Course	Year of Introduction	Employability	Entrepreneurship	Skill development
1	B.Tech	MAT01	Engineering Mathematics-I	2016	√		
2		CST01	Computer Programming	2016			√
3		CET01	Environmental Studies	2016			√
4		CET02	Basic Civil Engineering	2016	√		
5		MET02	Basic Mechanical Engineering	2016	√		
6		ENT01	English	2016	√		
7		CSP01	Computer Programming Lab	2016			√
8		ENP01	English Communication Lab	2016	√		√
9		MAT02	Engineering Mathematics II	2017	√		
10		CST02	Data structures	2017	√		
11		PHY01	Engineering Physics	2017	√		
12		CYT01	Engineering Chemistry	2017	√		
13		EET02	Circuit theory	2017	√		
14		MET01	Engineering Graphics	2017	√		
15		CSP02	Data Structures Lab	2017			√
16		MEP01	Workshop practice	2017			√
17		MAT03	Engineering Mathematics – III	2017	√		
18		EET03	Network Analysis	2017	√		
19		ECT02	Electronic Devices	2017	√		
20		ECT03	Signals & Systems	2017	√		
21		ECT04	Electromagnetic Fields & Waves	2017	√		
22		EET41	Electrical Technology	2017	√		
23		EET41	Electrical Circuits and Machines Lab	2017			√
24		ECP01	MATLAB and Simulation Lab	2017			√

25	ECT05	Electronic Circuits Analysis	2018	√		
26	ECT06	Pulse and Digital Circuits	2018	√		
27	ECT07	Switching Theory and Logic Design	2018	√	√	√
28	ECT08	Random Signals and Stochastic Process	2018	√		
29	ECT09	Analog Communication	2018	√	√	√
30	ECT10	Transmission line and waveguides	2018	√		
31	EET42	Control Systems	2018	√		
32	ECP02	Electronic Circuits Analysis Lab	2018			√
33	ECP03	Analog Communication Lab	2018			√
34	EOT01	Economics	2018	√	√	√
35	AOT01	Accountancy	2018	√	√	√
36	ECT11	Analog IC Applications	2018	√		
37	ECT12	Antennas and Wave Propagation	2018	√		
38	ECT13	Electronic Measurements and Instrumentation	2018	√		
39	ECT14	Digital Communication	2018	√		
40	ECT15	Computer Organization	2018	√		
41	ECP04	Digital Circuits Lab	2018			√
42	ECP05	Digital Communication Lab	2018			√
43	ECP06	Electronic Measurements Lab	2018			√
44	MET43	Management Science	2019	√	√	√
45	ECT16	Digital IC Design Applications	2019	√		
46	ECT17	VLSI Design	2019	√		
47	ECT18	Microprocessors and Interfacing	2019	√		
48	ECT19	Microwave Techniques	2019	√		

49		ECT20	Digital Signal Processing	2019	√		
50		EC-OE01/ EC-OE02	Elective -I (Open Elective)	2019	√		
51		ECP07	IC Applications Lab	2019			√
52		ECP08	VLSI Lab	2019			√
53		ECT21	Radar Engineering	2019	√		
54		ECT22	Optical Communication	2019	√		
55		ECT23	Mobile Communication	2019	√		
56		ECT24	Communication Networks	2019	√		
57		ECT25	Elective-II (Dept Elective)	2019	√		
58		ECP09	Microprocessors and Interfacing Lab	2019			√
59		ECP10	Microwave and Optical Communication Lab	2019			√
60		ECP11	DSP Lab	2019			√
61		ECT26	Elective III (Discipline: e_ Learning)	2020	√		
62		ECT27	Elective IV (MOOCs)	2020			√
63		ECP12	Mini Project / Internship	2020			√
64		ECP13	Project Work	2020			√

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years. (pe ())

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1.	MAT01	Engineering Mathematics- I	2016	

2.	CET02	Basic Civil Engineering	2016
3.	MET02	Basic Mechanical Engineering	2016
4.	ENT01	English	2016
5.	ENP01	English Communication Lab	2016
6.	MAT02	Engineering Mathematics II	2017
7.	CST02	Data structures	2017
8.	PHY01	Engineering Physics	2017
9.	CYT01	Engineering Chemistry	2017
10.	EET02	Circuit theory	2017
11.	MET01	Engineering Graphics	2017
12.	MAT03	Engineering Mathematics – III	2017
13.	EET03	Network Analysis	2017
14.	ECT02	Electronic Devices	2017
15.	ECT03	Signals & Systems	2017
16.	ECT04	Electromagnetic Fields & Waves	2017
17.	EET41	Electrical Technology	2017
18.	ECT05	Electronic Circuits Analysis	2018
19.	ECT06	Pulse and Digital Circuits	2018
20.	ECT07	Switching Theory and Logic Design	2018
21.	ECT08	Random Signals and Stochastic Process	2018
22.	ECT09	Analog Communication	2018

43/64= 67.18%

23.	ECT10	Transmission line and waveguides	2018
24.	EET42	Control Systems	2018
25.	EOT01	Economics	2018
26.	AOT01	Accountancy	2018
27.	ECT11	Analog IC Applications	2018
28.	ECT12	Antennas and Wave Propagation	2018
29.	ECT13	Electronic Measurements and Instrumentation	2018
30.	ECT14	Digital Communication	2018
31.	ECT15	Computer Organization	2018
32.	MET43	Management Science	2019
33.	ECT16	Digital IC Design Applications	2019
34.	ECT17	VLSI Design	2019
35.	ECT18	Microprocessors and Interfacing	2019
36.	ECT19	Microwave Techniques	2019
37.	ECT20	Digital Signal Processing	2019
38.	EC-OE01/ EC-OE02	Elective -I (Open Elective)	2019
39.	ECT21	Radar Engineering	2019
40.	ECT22	Optical Communication	2019
41.	ECT23	Mobile Communication	2019
42.	ECT24	Communication Networks	2019

43.	ECT25	Elective-II (Dept Elective)	2019	
S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	ECT07	Switching Theory and Logic Design	2018	5/64=7.8%
2	ECT09	Analog Communication	2018	
3	EOT01	Economics	2018	
4	AOT01	Accountancy	2018	
5	MET43	Management Science	2019	

Electrical and Electronics Engineering								
S. No.	Name of the Programme	Course Code	Title of the Course	Semester	Employability	Entrepreneurship	Skill	
1	B.TECH	MAT01	Engineering Mathematics-I	I	√			
2		CST01	Computer Programming		√	√	√	
3		CET01	Environmental Studies					
4			Basic Civil Engineering					
5			Basic Mechanical Engineering					
6		ENT01	English		√	√		
7		CSP01	Computer Programming Lab		√	√	√	
8		ENP01	English Communication Lab		√	√	√	√
9		MAT02	Engineering Mathematics –II	II				
10		CST02	Data Structures		√	√		
11		PHT01	Engineering Physics					
12		CYT01	Engineering Chemistry					
13		MET01	Engineering Graphics					
14		EET02	Circuit Theory		√			
15		CSP02	Data Structures Lab					√
16		MEP01	Workshop Practice					√
17		MAT 03	Engineering Mathematics-III	III				
18		EET 03	Network Analysis		√			
19		ECT02	Electronic Devices		√	√		
20		EET04	Electromagnetic Fields		√			
21		EET05	Generation of Electrical Power		√	√		
22		EET06	Electromechanical Energy Conversion-I		√			
23		EEP 01	Circuits and Networks Lab					√
24		EEP 02	Matlab Simulation Lab					√
25		EET07	Signals and Systems	√				
26		ECT55	Analog Circuits	√				
27		HUT03	Economics	IV				
28		HUT04	Accountancy					
29		ECT56	Digital Logic Design		√			
30		EET11	Power Systems-I		√			
31		EET12	Electromechanical Energy Conversion-II		√			
32		EEP03	Electromechanical Energy Conversion-I lab					√
33		EEP04	Electronic Devices and Circuits Lab					√
34		EET13	Linear Control Systems		√			
35		ECT57	Pulse and Digital Circuits	√				
36		ECT58	Analog and Digital IC Applications	√				
37		HU02	Management Science	V				
38		EET14	Power Systems-II		√			
39		EET15	Electromechanical Energy Conversion-III		√			
40		EEP05	Electromechanical Energy Conversion-II Lab					√
41		EE P06	PDC & IC Lab					√
42		EET16	Advanced Control System		√			
43		EET17	Microprocessors and Microcontrollers		√			
44		EET18	Power System Analysis		√			
45		EET19	Power Electronics	√				
46			0.00E+00 Elective-I (OPEN ELECTIVE)	VI				

47	EET10	Electrical and Electronic Measurements		v		
48	EEP07	Control Systems Lab				v
49	EEP08	EEM Lab				v
50	EET20	Power System Operation and Control		v		
51	EET21	Power Semiconductor Controlled Drives		v		
52	EET22	Utilization of Electrical Power			v	
53	EET23	Power System Protection		v		
54	EEL-01	Elective –II (Department)	VII	v		
55	EEL02	Elective-III(Department)		v		
56	EEP09	Power Electronics Lab				v
57	EEP10	Microprocessors and Applications Lab				v
58	EEL03	Elective-IV (e-learning)				
59	EEL04	Elective -V(MOOCs)				
60	EEP11	Mini Project / Internship	VIII		v	v
61	EEP12	Power System Simulation Lab				v
62	EEP13	Project Work			v	v

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No Course Code Title of the Course Year of Introduction Average percentage of Courses having focus on Employability during the last five years

1	MAT01	Engineering Mathematics-I	2016	
2	CST01	Computer Programming	2016	
3	ENT01	English	2017	
4	CSP01	Computer Programming Lab	2016	
5	ENP01	English Communication Lab	2017	32/62=51.61%
6	CST02	Data Structures	2017	
7	EET02	Circuit Theory	2017	
8	EET 03	Network Analysis	2017	
9	ECT02	Electronic Devices	2017	

10 EET04	Electromagnetic Fields	2017
11 EET05	Generation of Electrical Power	2017
12 EET06	Electromechanical Energy Conversion-I	2017
13 EET07	Signals and Systems	2018
14 ECT55	Analog Circuits	2018
15 ECT56	Digital Logic Design	2018
16 EET11	Power Systems-I	2018
17 EET12	Electromechanical Energy Conversion-II	2018
18 EET13	Linear Control Systems	2018
19 ECT57	Pulse and Digital Circuits	2018
20 ECT58	Analog and Digital IC Applications	2018
21 EET14	Power Systems-II	2018
22 EET15	Electromechanical Energy Conversion-III	2018
23 EET16	Advanced Control System	2019
24 EET17	Microprocessors and Microcontrollers	2019
25 EET18	Power System Analysis	2019
26 EET19	Power Electronics	2019
27 EET10	Electrical and Electronic Measurements	2019

28	EET20	Power System Operation and Control	2019
29	EET21	Power Semiconductor Controlled Drives	2019
30	EET23	Power System Protection	2019
31	EEL-01	Elective –II (Department)	2019
32	EEL02	Elective-III(Department)	2019

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CST01	Computer Programming	2016	
2	ENT01	English	2017	10/62=16.12%

3	CSP01	Computer Programming Lab	2016
4	ENP01	English Communication Lab	2017
5	CST02	Data Structures	2017

6	ECT02	Electronic Devices	2017
7	EET05	Generation of Electrical Power	2017
8	EET22	Utilization of Electrical Power	2019

9	EEP11	Mini Project / Internship	2020	
10	EEP13	Project Work	2020	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
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1	CST01	Computer Programming	2016
2	CSP01	Computer Programming Lab	2016
3	ENP01	English Communication Lab	2017

4	CSP02	Data Structures Lab	2017	18/62=29.03%
5	MEP01	Workshop Practice	2016	
6	EEP 01	Circuits and Networks Lab	2017	
7	EEP 02	Matlab Simulation Lab	2017	

8	EEP03	Electromechanical Energy Conversion-I lab	2018
9	EEP04	Electronic Devices and Circuits Lab	2018

10	EEP05	Electromechanical Energy Conversion-II Lab	2018
11	EE P06	PDC & IC Lab	2018
12	EEP07	Control Systems Lab	2019
13	EEP08	EEM Lab	2019

14	EEP09	Power Electronics Lab	2019
15	EEP10	Microprocessors and Applications Lab	2019
16	EEP11	Mini Project / Internship	2020

17	EEP12	Power System Simulation Lab	2020
18	EEP13	Project Work	2020

1.1.3. Employability / Entrepreneurship / Skill Development – Mapping

R18 Regulations

S. No.	Name of the Programme	Course Code	Title of the Course	Semester	Employability	Entrepreneurship	Skill
1		MABST 101	Mathematics-I	I			
2		PYBST102	Modern Physics				
3		CSEST103	Programming for problem solving		√	√	√
4		CEEST104	Engineering Mechanics				
5		MEESW105	Workshop/ Manufacturing Practice				
6		CSESP106	Programming for problem solving lab				
7		CEMCT107	Environmental Science				
9		MABST201	Mathematics-II	II			
10		CYBST202	Engineering Chemistry				
11		ENHST 203	English		√		
12		EEEST204	Basic Electrical Engineering		√		
13		MEEST205	Engineering Graphics and Design				
14		ENHSP 206	English Communication Lab		√		
15		MABST301	Mathematics –III	III			
16		EEPCT302	Electro Magnetic Fields		√		
17		EEPCT303	Electrical Circuit Analysis		√		
18		EEPCT304	Electrical Machines –I		√		
19		ECPCT305	Analog Electronics				
20		EOHST306	Economics				
21		EEPCT307	Electrical Circuit Analysis Lab				√
22		EEPCT308	Electrical Machines-I Lab				√
23		ECPCT309	Analog Electronics Lab				√
24		PAMCT310	Constitution of India				
25		EEPCT401	Power systems-I		√		
26		ECPCT402	Digital Electronics		√		

27		ECPCT403	Signals and Systems			
28		EEPCT404	Electrical Machines-II	IV		
29		EOHST405	Accountancy			
30		EEPCP406	Measurements & Instrumentation Lab			√
31	B.TECH	EEPCP407	Electrical Machines-II Lab			√
32		ECPCP408	Digital Electronics Lab			√
33		EEPCT501	Control Systems		√	
34		EEPCT502	Power Systems- II		√	
35		ECPCP503	Microprocessors	V	√	
36		EEPET504	Professional Elective -I		√	
37		EEPCP505	Control Systems Lab			√
38		EEPCP506	Power Systems - I Lab			√
39		ECPCP507	Micro Processors Lab			√
40		EEPCT601	Power Systems - III		√	
41		EEPCT602	Power Electronics			
42		EEPET603	Professional Elective - II			
43		EEPET604	Professional Elective - III			
44		EEOET605	Open Elective -I Online (MOOCS)	VI		
45		EEOET606	Open Elective -II Online (MOOCS)			
46		MGHST607	Management Science			
47		EEPCP608	Power Electronics Lab			
48		ECPCP609	Electronic Design Lab			
49		EEPET701	Professional Elective - IV			
50		EEPET702	Professional Elective - V			
51		EEPET703	Professional Elective - VI			
52		EEPCP704	Power System -II Lab	VII		
53		EEPCX705	Project work - Phase I			
54		EEPCP706	Summer -Internship/ Mini project			
55		EEPET801	Professional Elective - VII			
56		EEPET802	Professional Elective - VIII			
57		EEOET803	Open Elective - III	VIII		
58		EEOET804	Open Elective - IV			
59		EEPCX805	Project work - Phase II			

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	CSEST103	Programming for problem solving	2018	23/59=38.98%
2	ENHST 203	English	2019	
3	EEEST204	Basic Electrical Engineering	2019	
4	ENHSP 206	English Communication Lab	2019	
5	EEPCT302	Electro Magnetic Fields	2019	
6	EEPCT303	Electrical Circuit Analysis	2019	
7	EEPCT304	Electrical Machines -I	2019	
8	EEPCT401	Power systems-I	2020	
9	ECPCT402	Digital Electronics	2020	
10	EEPCT501	Control Systems	2020	
11	EEPCT502	Power Systems- II	2020	
12	ECPCT503	Microprocessors	2020	
13	EEPET504	Professional Elective -I	2020	
14	EEPCT601	Power Systems - III	2021	
15	EEPCT602	Power Electronics	2021	
16	EEPET603	Professional Elective - II	2021	
17	EEPET604	Professional Elective - III	2021	
18	EEPET701	Professional Elective - IV	2021	
19	EEPET702	Professional Elective - V	2021	

20	EEPET703	Professional Elective – VI	2021
21	EEPET801	Professional Elective – VII	2022
22	EEPET802	Professional Elective – VIII	2022
23	EEPCX805	Project work-phase II	2022

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CSEST103	Programming for problem solving	2018	4/59=6.77%
2	ECPCP609	Electronic Design Lab	2021	
3	EEPCX705	Project work – Phase I	2021	
4	EEPCI706	Summer -Internship/ Mini project	2021	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	CSEST103	Programming for problem solving	2018	15/59=25.42%
2	EEPCP307	Electrical Circuit Analysis Lab	2019	
3	EEPCP308	Electrical Machines-I Lab	2019	
4	ECPCP309	Analog Electronics Lab	2019	
5	EEPCP406	Measurements & Instrumentation Lab	2020	
6	EEPCP407	Electrical Machines-II Lab	2020	
7	ECPCP408	Digital Electronics Lab	2020	
8	EEPCP505	Control Systems Lab	2020	
9	EEPCP506	Power Systems - I Lab	2020	
10	ECPCP507	Micro Processors Lab	2020	
11	EEPCP608	Power Electronics Lab	2021	
12	ECPCP609	Electronic Design Lab	2021	
13	EEPCP704	Power System –II Lab	2021	
14	EEPCX705	Project work – Phase I	2021	
15	EEPCI706	Summer -Internship/ Mini project	2021	

1.1.3. Employability / Entrepreneurship / Skill Development – Mapping

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S. No.	Name of the Programme	Course Code	Title of the Course	Semester	Employability	Entrepreneurship	Skill
1		MABST 101	Mathematics-I	I			
2		PYBST102	Modern Physics				
3		CSEST103	Programming for problem solving		v	v	v
4		CEEST104	Engineering Mechanics				
5		MEESW105	Workshop/ Manufacturing Practice				
6		CSESP106	Programming for problem solving lab				
7		CEMCT107	Environmental Science				
9		MABST201	Mathematics-II	II			
10		CYBST202	Engineering Chemistry				
11		ENHST 203	English		v		
12		EEEST204	Basic Electrical Engineering		v		
13		MEEST205	Engineering Graphics and Design				
14		ENHSP 206	English Communication Lab		v		
15		MABST301	Mathematics –III				
16		EEPCT302	Electro Magnetic Fields	v			
17		EEPCT303	Electrical Circuit Analysis	v			
18		EEPCT304	Electrical Machines –I	v			

19		ECPCT305	Analog Electronics				
20		EOHST306	Economics	III			
21		EEPCP307	Electrical Circuit Analysis Lab				√
22		EEPCP308	Electrical Machines-I Lab				√
23		ECPCP309	Analog Electronics Lab				√
24		PAMCT310	Constitution of India				
25		EEPCT401	Power systems-I			√	
26		ECPCP402	Digital Electronics			√	
27		ECPCP403	Signals and Systems				
28		EEPCT404	Electrical Machines-II				
29		EOHST405	Accountancy	IV			
30		EEPCP406	Measurements & Instrumentation Lab				√
31	B.TECH	EEPCP407	Electrical Machines-II Lab				√
32		ECPCP408	Digital Electronics Lab				√
33		EEPCT501	Control Systems			√	
34		EEPCT502	Power Systems- II			√	
35		ECPCP503	Microprocessors			√	
36		EEPET504	Professional Elective -I	V		√	
37		EEPCP505	Control Systems Lab				√
38		EEPCP506	Power Systems - I Lab				√
39		ECPCP507	Micro Processors Lab				√
40		EEPCT601	Power Systems - III			√	
41		EEPCT602	Power Electronics				
42		EEPET603	Professional Elective - II				
43		EEPET604	Professional Elective - III				
44		EEOET605	Open Elective -I Online (MOOCS)	VI			
45		EEOET606	Open Elective -II Online (MOOCS)				
46		MGHST607	Management Science				
47		EEPCP608	Power Electronics Lab				
48		ECPCP609	Electronic Design Lab				
49		EEPET701	Professional Elective - IV				
50		EEPET702	Professional Elective - V				
51		EEPET703	Professional Elective - VI				
52		EEPCP704	Power System -II Lab	VII			
53		EEPCX705	Project work - Phase I				
54		EEPCI706	Summer -Internship/ Mini project				
55		EEPET801	Professional Elective - VII				
56		EEPET802	Professional Elective - VIII				
57		EEOET803	Open Elective - III	VIII			
58		EEOET804	Open Elective - IV				
59		EEPCX805	Project work - Phase II				

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	CSEST103	Programming for problem solving	2018	
2	ENHST 203	English	2019	
3	EEEST204	Basic Electrical Engineering	2019	
4	ENHSP 206	English Communication Lab	2019	
5	EEPCT302	Electro Magnetic Fields	2019	
6	EEPCT303	Electrical Circuit Analysis	2019	
7	EEPCT304	Electrical Machines -I	2019	
8	EEPCT401	Power systems-I	2020	
9	ECPCP402	Digital Electronics	2020	
10	EEPCT501	Control Systems	2020	
11	EEPCT502	Power Systems- II	2020	

23/59=38.98%

12	ECPC503	Microprocessors	2020
13	EEPET504	Professional Elective –I	2020
14	EEPCT601	Power Systems - III	2021
15	EEPCT602	Power Electronics	2021
16	EEPET603	Professional Elective - II	2021
17	EEPET604	Professional Elective - III	2021
18	EEPET701	Professional Elective – IV	2021
19	EEPET702	Professional Elective – V	2021
20	EEPET703	Professional Elective – VI	2021
21	EEPET801	Professional Elective – VII	2022
22	EEPET802	Professional Elective – VIII	2022
23	EEPCTX805	Project work-phase II	2022

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	CSEST103	Programming for problem solving	2018	4/59=6.77%
2	ECPCP609	Electronic Design Lab	2021	
3	EEPCTX705	Project work – Phase I	2021	
4	EEPCT706	Summer -Internship/ Mini project	2021	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	CSEST103	Programming for problem solving	2018	15/59=25.42%
2	EEPCT307	Electrical Circuit Analysis Lab	2019	
3	EEPCT308	Electrical Machines-I Lab	2019	
4	ECPCP309	Analog Electronics Lab	2019	
5	EEPCT406	Measurements & Instrumentation Lab	2020	
6	EEPCT407	Electrical Machines-II Lab	2020	
7	ECPCP408	Digital Electronics Lab	2020	
8	EEPCT505	Control Systems Lab	2020	
9	EEPCT506	Power Systems - I Lab	2020	
10	ECPCP507	Micro Processors Lab	2020	
11	EEPCT608	Power Electronics Lab	2021	
12	ECPCP609	Electronic Design Lab	2021	
13	EEPCT704	Power System –II Lab	2021	
14	EEPCTX705	Project work – Phase I	2021	
15	EEPCT706	Summer -Internship/ Mini project	2021	

Computer Science Engineering									
S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill	%	
2017-18									
1	B.Tech	MAT01	Engineering Mathematics – I	2017			✓	Percentage of employability 43/67= 64.17%	
2	B.Tech	CST01	Computer Programming	2017	✓		✓		
3	B.Tech	CET01	Environmental Studies	2017					
4	B.Tech	CET02	Basic Civil Engineering	2017	✓		✓		
5	B.Tech	MET02	Basic Mechanical Engineering	2017	✓		✓		
6	B.Tech	ENT01	English	2017					
7	B.Tech	CSP01	Computer Programming Lab	2017	✓		✓		
8	B.Tech	ENP01	English Communication Lab	2017	✓	✓			
9	B.Tech	MAT02	Engineering Mathematics – II	2017	✓				
10	B.Tech	CST02	Data Structures	2017	✓		✓		
11	B.Tech	PHT01	Engineering Physics	2017					
12	B.Tech	CYT01	Engineering Chemistry	2017			✓		
13	B.Tech	EET 02	Circuit Theory (Branch Subject)	2017	✓		✓		
14	B.Tech	MET01	Engineering Graphics	2017	✓		✓		
15	B.Tech	CSP02	Data Structures Lab	2017	✓		✓		
16	B.Tech	MEP01	Workshop Practice	2017	✓		✓		
17	B.Tech	MAT 03	Engineering Mathematics-III	2017				Percentage of skill 56/67= 83.50%	
18	B.Tech	CST 03	Digital Logic Design	2017			✓		
19	B.Tech	CST 04	Discrete Mathematical Structures	2017			✓		
20	B.Tech	ECT 41	Elements of Electronics and Communication Engineering	2017			✓		
21	B.Tech	CST 05	Java and Advanced Data Structures	2017	✓		✓		
22	B.Tech	MAT 04	Probability and Statistics	2017	✓		✓		
23	B.Tech	ECP 01	Elements of Electronics and Communications Engineering Laboratory	2017			✓		
24	B.Tech	CSP 03	Java and Advanced Data Structures Laboratory	2017	✓		✓		
25	B.Tech	CST 06	Computer Organization	2017	✓		✓		
26	B.Tech	CST 07	Database Management Systems	2017	✓		✓		
27	B.Tech	CST 08	Python Programming Language	2017	✓		✓		
28	B.Tech	MAT 05	Computer Oriented Numerical Methods	2017			✓		
29	B.Tech	MAT 06	Computer Oriented Optimization Techniques	2017		✓	✓		Percentage of Entrepreneurship 6/67= 8.95%
30	B.Tech	MET 41	Simulation and Modeling	2017			✓		
31	B.Tech	EEP 04	Electrical Engineering Laboratory	2017			✓		
32	B.Tech	CSP 05	Database Management Systems Lab	2017	✓		✓		
33	B.Tech	CSP 06	Simulation Modeling and Python Programming Laboratory	2017		✓	✓		
34	B.Tech	CST 09	Theory of Computation	2017					
35	B.Tech	CST 10	Unfired Modeling Language	2017			✓		

36	B.Tech	CST 11	Operating Systems	2017	✓		✓
37	B.Tech	CST 12	Computer Networks	2017	✓		✓
38	B.Tech	CST 13	Principles of Programming Languages	2017	✓		✓
39	B.Tech	CST 14	Software Engineering	2017	✓		✓
40	B.Tech	CSP 07	CN and PPL Laboratory	2017	✓		✓
41	B.Tech	CSP 08	Operating Systems & UML Laboratory	2017	✓		✓
42	B.Tech	CST 15	Instructional Open Elective (Mandatory)	2017			
43	B.Tec	CST 16	Design and Analysis of Algorithms	2017	✓		✓
44	B.Tech	CST 17	System Programming	2017			✓
45	B.Tech	CST 18	Micro Processor and Interfacing	2017	✓		✓
46	B.Tech	CST 19	Software Project Management	2017	✓		✓
47	B.Tech	CSE 01	Massive Online Open Course (MOOCS) Elective-I	2017	✓		✓
48	B.Tech	CSP 10	Microprocessors and Interfacing Laboratory	2017	✓		✓
49	B.Tech	CSP 11	Algorithms and System Programming Laboratory	2017	✓		✓
50	B.Tech	CST 12	Soft Skills Laboratory	2017	✓		✓
51	B.Tech	CSE 20	Cyber Law and Ethics	2017	✓		✓
52	B.Tech	CST 21	Artificial Intelligence	2017	✓		✓
53	B.Tech	CST 22	Compiler Construction	2017			✓
54	B.Tech	CSE 02	Elective -II Cyber Security	2017	✓		✓
55	B.Tech	CSE 03	Elective-III Data Analytics	2017	✓		✓
56	B.Tech	HUT 10	Managerial Accountancy	2017	✓	✓	
57	B.Tech	CSP 13	Core Laboratory	2017	✓		✓
58	B.Tech	CSP 14	Elective -I Laboratory	2017			✓
59	B.Tech	CSP 15	Project Work-I	2017	✓		✓
60	B.Tech	CSP 16	Comprehensive Viva-Voice -I	2017			✓
	B.Tech	CST 24	Elective-IV	2017			
61	B.Tech	MET 42	Industrial Management	2017	✓	✓	✓
62	B.Tech	HUT 02	Managerial economics	2017	✓	✓	
63	B.Tech	CSE17	Elective-II Lab	2017	✓		✓
64	B.Tech	CSP 18	Project Work-II	2017	✓		✓
65	B.Tech	CSP 19	Seminar-I	2017			
66	B.Tech	CSP 20	Comprehensive Viva-Voice -2	2017	✓		✓
67	B.Tech	CSP 21	Internship/Mini Project Viva-Voice Exam	2017	✓		✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	CST01	Computer Programming	2017	
2	CET02	Basic Civil Engineering	2017	
3	MET02	Basic Mechanical Engineering	2017	
4	CSP01	Computer Programming Lab	2017	

5	ENP01	English Communication Lab	2017	Percentage of employability 48/67= 71.64%
6	MAT02	Engineering Mathematics – II	2017	
7	CST02	Data Structures	2017	
8	EET 02	Circuit Theory (Branch Subject)	2017	
9	MET01	Engineering Graphics	2017	
10	CSP02	Data Structures Lab	2017	
11	MEP01	Workshop Practice	2017	
12	CST 05	Java and Advanced Data Structures	2017	
13	MAT 04	Probability and Statistics	2017	
14	CSP 03	Java and Advanced Data Structures Laboratory	2017	
15	CST 06	Computer Organization	2017	
16	CST 07	Database Management Systems	2017	
17	CST 08	Python Programming Language	2017	
18				
19	CSP 05	Database Management Systems Lab	2017	
20	CST 11	Operating Systems	2017	
21	CST 12	Computer Networks	2017	
22	CST 13	Principles of Programming Languages	2017	
23	CST 14	Software Engineering	2017	
24	CSP 07	CN and PPL Laboratory	2017	
25	CSP 08	Operating Systems & UML Laboratory	2017	
26	CST 16	Design and Analysis of Algorithms	2017	
27	CST 18	Micro Processor and Interfacing	2017	
28	CST 19	Software Project Management	2017	
29	CSE 01	Massive Online Open Course (MOOCs) Elective-I	2017	
30	CSP 10	Microprocessors and Interfacing Laboratory	2017	
31	CSP 11	Algorithms and System Programming Laboratory	2017	
32	CST 12	Soft Skills Laboratory	2017	
33	CSE 20	Cyber Law and Ethics	2017	
34	CST 21	Artificial Intelligence	2017	
35	CST 22	Compiler Construction	2017	
36	CSE 02	Elective –II Cyber Security	2017	
37	CSE 03	Elective-III Data Analytics	2017	
38	HUT 10	Managerial Accountancy	2017	
39	CSP 13	Core Laboratory	2017	
40	CSP 14	Elective -I Laboratory	2017	
41	CSP 15	Project Work-I	2017	
42	MET 42	Industrial Management	2017	
43	HUT 02	Managerial economics	2017	
44	CSE17	Elective-II Lab	2017	
45	CSP 18	Project Work-II	2017	
46	CSP 19	Seminar-I	2017	
47	CSP 20	Comprehensive Viva-Voice -2	2017	
48	CSP 21	Internship/Mini Project Viva-Voice Exam	2017	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	ENP01	English Communication Lab	2017	Percentage of Entrepreneurship 6/67= 8.95%
2	MAT 06	Computer Oriented Optimization Techniques	2017	
3	CSP 06	Simulation Modeling and Python Programming Laboratory		
4	HUT 10	Managerial Accountancy	2017	
5	MET 42	Industrial Management	2017	
6	HUT 02	Managerial economics	2017	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
S. No	Course Code	Title of the Course	Year of Introduction	If revision has been carried out in the syllabus during last 5 years, Percentage of content added or replaced
1	MAT01	Engineering Mathematics – I	2017	
2	CST01	Computer Programming	2017	
3	CET01			
4	CET02	Basic Civil Engineering	2017	
5	MET02	Basic Mechanical Engineering	2017	
6	ENT01	English	2017	
7	CSP01	Computer Programming Lab	2017	
8	ENP01	English Communication Lab	2017	
9	MAT02	Engineering Mathematics – II	2017	
10	CST02	Data Structures	2017	
11	PHT01	Engineering Physics	2017	
12	CYT01	Engineering Chemistry	2017	
13	EET 02	Circuit Theory (Branch Subject)	2017	
14	MET01	Engineering Graphics	2017	
15	CSP02	Data Structures Lab	2017	
16	MEP01	Workshop Practice	2017	
17	MAT 03	Engineering Mathematics-III	2017	
18	CST 03	Digital Logic Design	2017	
19	CST 04	Discrete Mathematical Structures	2017	
20	ECT 41	Elements of Electronics and Communication Engineering	2017	
21	CST 05	Java and Advanced Data Structures	2017	
22	MAT 04	Probability and Statistics	2017	
23	ECP 01	Elements of Electronics and Communications Engineering Laboratory	2017	
24	CSP 03	Java and Advanced Data Structures Laboratory	2017	
25	CST 06	Computer Organization	2017	
26	CST 07	Database Management Systems	2017	
27	CST 08	Python Programming Language	2017	
28	MAT 05	Computer Oriented Numerical Methods	2017	
29	MAT 06	Computer Oriented Optimization Techniques	2017	
30	MET 41	Simulation and Modeling	2017	
31	EEP 04	Electrical Engineering Laboratory	2017	
32	CSP 05	Database Management Systems Lab	2017	
33	CSP 06	Simulation Modeling and Python Programming Laboratory	2017	
34	CST 09	Theory of Computation	2017	
35	CST 10	Unfired Modeling Language	2017	
36	CST 11	Operating Systems	2017	
37	CST 12	Computer Networks	2017	
38	CST 13	Principles of Programming Languages	2017	
39	CST 14	Software Engineering	2017	
40	CSP 07	CN and PPL Laboratory	2017	
41	CSP 08	Operating Systems & UML Laboratory	2017	
42	CST 16	Design and Analysis of Algorithms	2017	
43	CST 17	System Programming	2017	
44	CST 18	Micro Processor and Interfacing	2017	
45	CST 19	Software Project Management	2017	
46	CSE 01	Massive Online Open Course (MOOCS) Elective-I	2017	

47	CSP 10	Microprocessors and Interfacing Laboratory	2017
48	CSP 11	Algorithms and System Programming Laboratory	2017
49	CST 12	Soft Skills Laboratory	2017
50	CSE 20	Cyber Law and Ethics	2017
51	CST 21	Artificial Intelligence	2017
52	CST 22	Compiler Construction	2017
53	CSE 02	Elective -II Cyber Security	2017
54	CSE 03	Elective-III Data Analytics	2017
55	CSP 13	Core Laboratory	2017
56	CSP 14	Elective -I Laboratory	2017
57	CSP 15	Project Work-I	2017
58	CSP 16	Comprehensive Viva-Voice -I	2017
59	CST 24	Elective-IV	2017
60	MET 42	Industrial Management	2017
61	HUT 02	Managerial economics	2017
62	CSE17	Elective-II Lab	2017
63	CSP 18	Project Work-II	2017
64	CSP 19	Seminar-I	2017
65	CSP 20	Comprehensive Viva-Voice -2	2017
66	CSP 21	Internship/Mini Project Viva-Voice Exam	2017

1.1.3. Employability/ Entrepreneurship/ Skill development – Mapping

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	Employability	Entrepreneurship	Skill
1	B.Tech	MABST 101	Mathematics – I	2018	✓		
2	B.Tech	PYBST 102	Modern Physics	2018			✓
3	B.Tech	CSEST 103	Programming for Problem Solving	2018	✓		✓
4	B.Tech	CSEST104	Branch Subject Python Programming	2018	✓		✓
5	B.Tech	CSESP 106	Programming for Problem Solving Lab	2018	✓		✓
6	B.Tech	CEMCT107	Environmental Science	2018			
7	B.Tech	MABST 201	Mathematics- II	2018	✓		
8	B.Tech	CYBST 202	Engineering Chemistry	2018			✓
9	B.Tech	ENHST 203	English	2018	✓		✓
10	B.Tech	EEBST 204	Basic Electrical Engineering	2018	✓		✓
11	B.Tech	MEEST 205	Engineering Graphics	2018	✓		✓
12	B.Tech	ENHSP 206	English Communication Lab	2018	✓		✓
13	B.Tech	CSPCT 301	Data structure and AlgorithmS	2018	✓		✓
14	B.Tech	COHST 302	Managerial Accountancy	2018	✓	✓	✓
15	B.Tech	CSPCT 303	Discrete Mathematics	2018			✓
16	B.Tech	MABST 304	Probability and Statistics	2018	✓		✓
17	B.Tech	ECPCT 305	Analog Electronics	2018			✓
18	B.Tech	ECPCP306	Analog Electronics Lab	2018			✓
19	B.Tech	CSPCP307	Data structure and Algorithms Lab	2018	✓		✓
20	B.Tech	CSPCW308	IT Workshop (Sci Lab/MAT Lab)	2018	✓		✓
21	B.Tech	PAMCT309	Constitution of India	2018			✓
22	B.Tech	MABST 401	Complex Analysis and Numerical Techniques	2018			✓
23	B.Tech	ECPCT 402	Digital Electronics and Logic Design	2018			✓
24	B.Tech	MEPCT 403	Simulation and Modeling	2018	✓	✓	
25	B.Tech	CSPCT 404	Design and Analysis of Algorithms	2018	✓		✓
26	B.Tech	CSPCT 405	Computer Organization	2018	✓		✓
27	B.Tech	CSPCT 406	Database Management Systems	2018	✓		✓
28	B.Tech	CSPCP 407	Algorithms Laboratory	2018	✓		✓
29	B.Tech	CSPCP 408	Assembly Language Programming and VHDL Laboratory	2018	✓		✓
30	B.Tech	CSPCP 409	Database Management Systems Laboratory	2018	✓		✓
31	B.Tech	CSPCT 501	Operating Systems	2018	✓		✓
32	B.Tech	CSPCT 502	Formal Languages and Automata Theory	2018	✓		✓
33	B.Tech	CSPCT 503	Software Engineering	2018	✓		✓
34	B.Tech	CSPCT 504	Embedded Systems and Internet of Things	2018	✓		✓
35	B.Tech	MEEST 505	Optimization Techniques	2018	✓	✓	✓

36	B.Tech	MEBST 506	Basics of Mechanical Engineering	2018	✓		✓
37	B.Tech	CSPCP 507	Operating Systems Laboratory	2018	✓		✓
38	B.Tech	CSPCP 508	Software Engineering Laboratory	2018	✓		✓
39	B.Tech	CSPCP 509	Internet of Things Laboratory	2018	✓		✓
40	B.Tech	CSSEP 510	Seminar I	2018			✓
41	B.Tech	CSPCT 601	Principles of Programming Languages	2018	✓		✓
42	B.Tech	CSPCT 602	Computer Networks	2018	✓		✓
43	B.Tech	CSPCT 603	Language Processors	2018	✓		✓
44	B.Tech	CSPCT 604	Artificial Intelligence	2018	✓		✓
45	B.Tech	CEEST 605	Basics of Civil Engineering	2018			✓
46	B.Tech	CSPCT 606	Cryptography	2018	✓		✓
47	B.Tech	CSOET 607	Open Elective – I Online	2018			✓
48	B.Tech	CSPCP 608	Computer Networks Laboratory	2018	✓		✓
48	B.Tech	CSPCP 609	Language Processors Laboratory	2018	✓		✓
49	B.Tech	CSPCP 610	Artificial Intelligence Laboratory	2018	✓		✓
50	B.Tech	CSCVP 611	Comprehensive Viva-Voce	2018			✓
51	B.Tech	CSPET 701	Program Elective - I	2018			✓
52	B.Tech	CSPET 702	Program Elective - II	2018			✓
53	B.Tech	CSPEP 703	Program Elective - I Laboratory	2018			✓
54	B.Tech	CSPEP 704	Program Elective - II Laboratory	2018			✓
55	B.Tech	CSPWP 705	Project Work Phase-1	2018			✓
56	B.Tech	CSINP 706	Internship / Mini Project	2018			✓
57	B.Tech	CSSEP 707	Seminar - II	2018			✓
58	B.Tech	MEPCT 801	Industrial Management	2018	✓	✓	✓
59	B.Tech	COPCT 802	Managerial Economics	2018	✓	✓	✓
60	B.Tech	CSPET 803	Program Elective – III	2018			✓
61	B.Tech	CSOET 804	Open Elective – II Online	2018			✓
62	B.Tech	CSOET 805	Open Elective – III Online	2018	✓		✓
63	B.Tech	CSPEP 806	Program Elective - III Laboratory	2018	✓		✓
64	B.Tech	CSPWP 807	Project Work Phase-2	2018			✓

1.1.3. Average percentage of Courses having focus on Employability/ Entrepreneurship/ Skill development during the last five years.

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Employability during the last five years
1	MABST 101	Mathematics – I	2018	43/64=67.10
2	CSEST 103	Programming for Problem Solving	2018	
3	CSEST104	Branch Subject Python Programming	2018	
4	CSESP 106	Programming for Problem Solving Lab	2018	
5	MABST 201	Mathematics- II	2018	
6	ENHST 203	English	2018	
7	EEBST 204	Basic Electrical Engineering	2018	
8	MEEST 205	Engineering Graphics	2018	
9	ENHSP 206	English Communication Lab	2018	
10	CSPCT 301	Data structure and Algorithms	2018	
11	COHST 302	Managerial Accountancy	2018	
12	CSPCT 303	Discrete Mathematics	2018	
13	MABST 304	Probability and Statistics	2018	
14	CSPCP307	Data structure and Algorithms Lab	2018	
15	CSPCW308	IT Workshop (Sci Lab/MAT Lab)	2018	
16	MEPCT 403	Simulation and Modeling	2018	
17	CSPCT 404	Design and Analysis of Algorithms	2018	
18	CSPCT 405	Computer Organization	2018	
19	CSPCT 406	Database Management Systems	2018	
20	CSPCP 407	Algorithms Laboratory	2018	

21	CSPCP 408	Assembly Language Programming and VHDL Laboratory	2018
22	CSPCP 409	Database Management Systems Laboratory	2018
23	CSPCT 501	Operating Systems	2018
24	CSPCT 502	Formal Languages and Automata Theory	2018
25	CSPCT 503	Software Engineering	2018
26	CSPCT 504	Embedded Systems and Internet of Things	2018
27	MEEEST 505	Optimization Techniques	2018
28	MEBST 506	Basics of Mechanical Engineering	2018
29	CSPCP 507	Operating Systems Laboratory	2018
30	CSPCP 508	Software Engineering Laboratory	2018
31	CSPCP 509	Internet of Things Laboratory	2018
32	CSPCT 601	Principles of Programming Languages	2018
33	CSPCT 602	Computer Networks	2018
34	CSPCT 603	Language Processors	2018
35	CSPCT 604	Artificial Intelligence	2018
36	CSPCT 606	Cryptography	2018
37	CSPCP 608	Computer Networks Laboratory	2018
38	CSPCP 609	Language Processors Laboratory	2018
39	CSPCP 610	Artificial Intelligence Laboratory	2018
40	MEPCT 801	Industrial Management	2018
41	COPCT 802	Managerial Economics	2018
42	CSOET 805	Open Elective – III Online	2018
43	CSPEP 806	Program Elective - III Laboratory	2018

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Entrepreneurship during the last five years
1	COHST 302	Managerial Accountancy	2018	5/64=7.81
2	MEPCT 403	Simulation and Modeling	2018	
3	MEEEST 505	Optimization Techniques	2018	
4	MEPCT 801	Industrial Management	2018	
5	COPCT 802	Managerial Economics	2018	

S. No	Course Code	Title of the Course	Year of Introduction	Average percentage of Courses having focus on Skill development during the last five years
1	PYBST 102	Modern Physics	2018	61/64 95.31
2	CSEST 103	Programming for Problem Solving	2018	
3	CSEST104	Branch Subject Python Programming	2018	
4	CSESP 106	Programming for Problem Solving Lab	2018	
5	CYBST 202	Engineering Chemistry	2018	
6	ENHST 203	English	2018	
7	EEBST 204	Basic Electrical Engineering	2018	
8	MEEEST 205	Engineering Graphics	2018	
9	ENHSP 206	English Communication Lab	2018	
10	CSPCT 301	Data structure and Algorithms	2018	
11	COHST 302	Managerial Accountancy	2018	
12	CSPCT 303	Discrete Mathematics	2018	
13	MABST 304	Probability and Statistics	2018	
14	ECPCCT 305	Analog Electronics	2018	
15	ECPCP306	Analog Electronics Lab	2018	
16	CSPCP307	Data structure and Algorithms Lab	2018	
17	CSPCW308	IT Workshop (Sci Lab/MAT Lab)	2018	

18	PAMCT309	Constitution of India	2018
19	MABST 401	Complex Analysis and Numerical Techniques	2018
20	ECPCT 402	Digital Electronics and Logic Design	2018
21	CSPCT 404	Design and Analysis of Algorithms	2018
22	CSPCT 405	Computer Organization	2018
23	CSPCT 406	Database Management Systems	2018
24	CSPCP 407	Algorithms Laboratory	2018
25	CSPCP 408	Assembly Language Programming and VHDL Laboratory	2018
26	CSPCP 409	Database Management Systems Laboratory	2018
27	CSPCT 501	Operating Systems	2018
28	CSPCT 502	Formal Languages and Automata Theory	2018
29	CSPCT 503	Software Engineering	2018
30	CSPCT 504	Embedded Systems and Internet of Things	2018
31	MEEST 505	Optimization Techniques	2018
32	MEBST 506	Basics of Mechanical Engineering	2018
33	CSPCP 507	Operating Systems Laboratory	2018
34	CSPCP 508	Software Engineering Laboratory	2018
35	CSPCP 509	Internet of Things Laboratory	2018
36	CSSEP 510	Seminar I	2018
37	CSPCT 601	Principles of Programming Languages	2018
38	CSPCT 602	Computer Networks	2018
39	CSPCT 603	Language Processors	2018
40	CSPCT 604	Artificial Intelligence	2018
41	CEEST 605	Basics of Civil Engineering	2018
42	CSPCT 606	Cryptography	2018
43	CSOET 607	Open Elective – I Online	2018
44	CSPCP 608	Computer Networks Laboratory	2018
45	CSPCP 609	Language Processors Laboratory	2018
46	CSPCP 610	Artificial Intelligence Laboratory	2018
47	CSCVP 611	Comprehensive Viva-Voce	2018
48	CSPET 701	Program Elective - I	2018
49	CSPET 702	Program Elective - II	2018
50	CSPEP 703	Program Elective - I Laboratory	2018
51	CSPEP 704	Program Elective - II Laboratory	2018
52	CSPWP 705	Project Work Phase-1	2018
53	CSINP 706	Internship / Mini Project	2018
54	CSSEP 707	Seminar - II	2018
55	MEPCT 801	Industrial Management	2018
56	COPCT 802	Managerial Economics	2018
57	CSPET 803	Program Elective – III	2018
58	CSOET 804	Open Elective – II Online	2018
59	CSOET 805	Open Elective – III Online	2018
60	CSPEP 806	Program Elective - III Laboratory	2018
61	CSPWP 807	Project Work Phase-2	2018

1.1.3 Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development

2017-2018

SVU COLLEGE OF ARTS

1. Adult & Continuing Education

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MAAE -1.1	Alternative Learning Systems	2017	<ul style="list-style-type: none"> ➤ Remembrance of different forms of learning. ➤ Application of different technology support services for effective learning. ➤ Organization and administration of nonformal education programmes. ➤ Evaluation of nonformal education programmes. 	
2	MAAE-1.2	Policy Studies In Adult/Continuing Education	2017	<ul style="list-style-type: none"> ➤ Identify the socio-political movements during pre-independence period for the promotion of literacy. ➤ 2.Analyze the trends of adult education programmes during post-independence period from social education to saakshar 	

				<p>Bharat Mission.</p> <ul style="list-style-type: none"> ➤ 3. Describe the National and International organizations efforts for the promotion of literacy at various levels. ➤ 4. Explain the State & Central Govt policies on adult education and special reference to literacy, post-literacy and continuing education. 	
3	MAAE-1.3	Adult Psychology And Learning	2017	<ul style="list-style-type: none"> ➤ 1: Acquire knowledge on psychological foundations and its relevance to Adult Education and Learners. ➤ 2: Learn classification of motives and motivation techniques to motivate the Adult Learner. ➤ 3: Compare the Adult Personality & Child personality based on three Domain principles. ➤ 4: Examine the Adult Learning characteristics and theories of learning, eventually he/she will apply all aspects 	

				in adult class room activity.	
4	MAAE-1.4	Socio-Philosophical Foundatons Of Adult Education	2017	<ul style="list-style-type: none"> ➤ Create thinking capacity to survival in the present society with philosophical approach. ➤ Know great eminent leaders biography, sacrifices their lives for society. ➤ Aware Dalit movement, women movement, co-operative movement in society especially rural areas. ➤ Examine the problems of society with reference to bonded labor, child labour, untouchability, transgender and provide awareness on human rights. 	
5	MAAE-1.5	Communication Methodsin Adult Education	2017	<ul style="list-style-type: none"> ➤ Remembering the concept and methods of communication and their application to adult Education ➤ Identifying different models of communication. ➤ Describing the media of communication and their utility in continuing education. ➤ Realising the use of different Audio- 	

				visual aids in teaching learning process.	
6	MAAE-1.6	Human Values And Professional Ethics-I	2017	<ul style="list-style-type: none"> ➤ know the importance of professional ethics and to implement the ethical values in various professions. ➤ understand about the Good and bad values and to analyze the basic moral concepts. ➤ inculcate the students in the aspects of pursharthas . ➤ 4. Know different crimes and its impact on personal and social life and theories of punishment 	
7	MAAE-2.1	Recent Trends In Adult And Continuing Education	2017	<ul style="list-style-type: none"> ➤ .Identify the variations of literacy growth among States and Nation with reference to gender, rural and urban. ➤ 2.Recognize the functions, activities of JSS and Saakshar Bharat Mission, to promote Life Long learning. ➤ 3. Understand the five-year plan period programmes in terms of literacy, non-formal and functional literacy. ➤ 4. Examine the significance of the 	

				extension activities as third dimension of literacy programmes at field level.	
8	MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2017	<ul style="list-style-type: none"> ➤ Remembering the meaning, foundations and theories of curriculum development with reference to adult learners. ➤ Distinguishing different principles and approaches of curriculum development. ➤ Interpreting the needs and interests of lifelong learners. ➤ Executing to evaluate Adult Education programmes 	
9	MAAE-2.3	Research Methods In Adult Education	2017	<ul style="list-style-type: none"> ➤ Understanding the concepts and methods of research. ➤ Adopting the suitable sampling methods for research studies. ➤ Developing tools for research studies. ➤ Ability of research report writing. 	
10	MAAE-2.4	Field Work & Practical Assignments	2017	<ul style="list-style-type: none"> ➤ Application of knowledge and skills in project designing ➤ Ability to do research work. ➤ Finding solutions to the problems 	

				<p>identified in his research work.</p> <ul style="list-style-type: none"> ➤ Preparing the research report. 	
11	MAAE-2.5	Management Of Adult/Continuing Education	2017	<ul style="list-style-type: none"> ➤ Know the principles of Management, Planning and Organizing capacity to conduct Adult Education Programmes. ➤ Develop Social and Communication Skills to organize village, Mandal, District, State and Central level programmes. ➤ Acquire project techniques for sustainable programmes. ➤ Learn and enhance research skills to write project report, monitoring and evaluation of data of Adult Education Programme. 	
12	MAAE-2.6	Human Values And Professional Ethics-Ii	2017	<ul style="list-style-type: none"> ➤ Understand and recognize the importance of Value Education & Human Values and also try to follow the traditional values of family, women and elders in the society. ➤ Examine code of ethics for medical and 	

				<p>health care professionals. They Can sensitize the rural people on Health Issues & Problems.</p> <ul style="list-style-type: none"> ➤ Explain the Environmental Protection and relationship between Man and Nature, causes of pollution and impact on environmental health. ➤ Recognize the need of Social ethics and fight against the anti-social activities, Organ trade, Human trafficking etc. 	
13	MAAE-3.1	Training In Adult And Continuing Education	2017	<ul style="list-style-type: none"> ➤ Identify the importance of training in Adult and Continuing Education programmes and differences between training and education. ➤ Know the training methods, training materials to organize the Adult and Continuing Education programmes. ➤ Follow the teaching methods like Lecture, discussion, demonstration and Role Play methods. ➤ Recognize training facilities at different levels like National, State, District and 	

				Local.	
14	MAAE-3.2	Comparative Studies In Adult Education	2017	<ul style="list-style-type: none"> ➤ Compare the Adult Education Programmes of different countries based on its aims and significance. ➤ Compare and contrast of Adult Education movement and progress in different countries like UK, USA, Denmark etc with reference to India. ➤ Find out the similarities and dissimilarities of Adult Education Programs in selected countries. ➤ Identify the problems of Adult Education in terms of Planning, Organization and Budget activities in developing countries and India. 	
15	MAAE-3.3	Material Development For Adult And Continuing Education	2017	<ul style="list-style-type: none"> ➤ Identify the significance of learning materials in Adult Education classes. ➤ Design the teaching learning activity objectives for better performance of Teacher educator in Adult Education Programmes. ➤ Enhance language forms and 	

				<p>competence and tune with the needs of the learner.</p> <ul style="list-style-type: none"> ➤ Develop teaching learning materials for self-learning 	
16	MAAE-3.4a	Peoples' participation And Development	2017	<ul style="list-style-type: none"> ➤ Analysing the role and functions of people committees, ➤ Understanding the functions of Panchayat Raj institutions. ➤ Knowledge on the role of co-operatives in rural development. ➤ Ability to catalyse the performance of PRIs and co-operatives. 	
17	MAAE-3.4b	Vocational Education And Skill Development	2017	<ul style="list-style-type: none"> ➤ Identify the relationships of Vocational Education and Adults development. ➤ Understand the institution training importance and its practices in vocational training. ➤ Identify the issues of Rural Vocational training in India and Asian Countries. ➤ Provide Vocational Guidance and Counselling for Adult trainees. 	

18	MAAE-3.4c	Guidance And Counselling In Adult And Continuing Education	2017	<ul style="list-style-type: none"> ➤ Remembering the concept and theories and perspectives of guidance and counselling in educational process. ➤ Recollecting understanding and analysis of educational problems of a clientele group. ➤ Knowing the roles and functions of guidance counsellor. ➤ Analysing the use of computers and internet in guidance and counselling. 	
19	MAAE-4.1	Monitoring And Evaluation	2017	<ul style="list-style-type: none"> ➤ Identify the concept of monitoring and monitoring systems in adult education ➤ 2.Describe the different evaluation models. ➤ 3.Demonstrate the tools and techniques of evaluation. ➤ 4.Understand the importance of learner evaluation. 	
20	MAAE-4.2	Human Resource Development And Management In Lifelong Learning	2017	<ul style="list-style-type: none"> ➤ Understand the importance of human resource development and its historical background. ➤ Analyze the human capital and its 	

				<p>functions in Adult Education.</p> <ul style="list-style-type: none"> ➤ Explain the cost benefit process and problems of measurements. ➤ Identify the need of planning in human resource development and relation to Adult Education. 		
21	MAAE-4.3a	Environment Education	And	2017	<ul style="list-style-type: none"> ➤ 1.Understand the fundamental aspects of environment and need of environmental protection. ➤ 2: Interpret the environmental crisis with reference to pollutions and its impact of human life need of Environmental Conservation. ➤ 3: Know the environmental laws and role of individual and community to Control environmental pollution. ➤ 4: Explain Ecology and eco factors for Ecological Balance. 	
22	MAAE-4.3d	Population Education		2017	<ul style="list-style-type: none"> ➤ Recollecting the concepts, needs and importance of population related terminologies. ➤ Analysing the causes and consequences 	

				<p>of population growth.</p> <ul style="list-style-type: none"> ➤ Distinguishing the roles of different agencies in promotion of population education and control. ➤ Identifying the different National population policies and influences fertility, mortality and migration. 	
23	MAAE-4.4	Dissertation / Project Work	2017	<ul style="list-style-type: none"> ➤ Application of knowledge and skills in project designing ➤ Ability to do research work. ➤ Finding solutions to the problems identified in his research work. ➤ Preparing the research report. 	

2. Ancient Indian History, Cultural Archeology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1	AIHC&A-304(B)	b) Social and Political Institutions in Ancient India	2017	<ul style="list-style-type: none"> ➤ The student will be able to understand the basic features of various theories and thoughts used in archaeological interpretations. ➤ They can formulate a research proposal and decide on appropriate materials and methods of analysis. ➤ They can present the findings and the process of conducting research in written and verbal formats. ➤ Students get acquainted with various developmental phases of the Indian social institutions and their significance in human life and values 	
2	AIHC&A-305(A)	a) Outlines of Indian History	2017	<ul style="list-style-type: none"> ➤ The non-history students as an external elective course become familiar in understanding the broad phases of Indian history and culture 	
3	AIHC&A-404(B)	b) India's Early Cultural Contacts with other Countries	2017	<ul style="list-style-type: none"> ➤ Cross regional cultural diffusion has been an important aspect of historical evolution. ➤ A strong and vibrating civilization having its impact felt upon other contemporary cultures has been a common phenomenon of history ➤ The students were able to understand the influence of Indian culture on Central Asia, south east asia, Japan, 	

3. Area Studies Programme

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1. 1	SEAP-104	Ancient Indian History Upto 1206 A.D.	2017	<ul style="list-style-type: none"> ➤ Students understand the causes for the spread of Indian culture in Southeast Asia. ➤ Know the different Indian dynasties of the past in Southeast Asia. ➤ Students will be able to learn the impact of Indian cultural on Southeast Asian societies 	
2.	SEAPS-203	Regional Geography Of South Pacific And East Asia	2017	<ul style="list-style-type: none"> ➤ Students identify physical setting, landforms, climate and soils of South Pacific. ➤ Comprehend on Australia, New Zealand, Japan and China ➤ Recognize the economic trends in South Pacific and East 	

3.	SEAPS-303	India And The World	2017	<ul style="list-style-type: none"> ➤ Students acquaint knowledge on Opening of Japan and its early western contacts. ➤ Knows Japan's militarization, Russo Japanese war and the First World War ➤ Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations.
4.	SEAPS-402	Developing Blue Economy	2017	<ul style="list-style-type: none"> ➤ Develop an understanding of the rise of industrial economies like Singapore, Malaysia, Thailand and Indonesia. ➤ Comprehend of the economies of Australia and New Zealand. ➤ Ability to know the Regional Economic Groups like ASEAN, ESCAP, APEC and EAS.

TOURISM:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill	Link to the relevant
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1.	T-102	Planning And Development Of Tourism	2017	<ul style="list-style-type: none"> ➤ Students understand geographical profile of different countries of Southeast Asia. ➤ Know the trends in population movement within Southeast Asia. ➤ Students will be able to assess location significance and various infrastructural
2	T. 201	Historical Application Of Tourism In India	2017	<ul style="list-style-type: none"> ➤ Students list the Christian Missionary activities in Southeast Asian countries. ➤ Knows the factors of Indian Emigration, and Chinese economic contribution in Southeast Asia. ➤ Comprehensive grasp over different cultures and religions in Southeast Asia
3	T 301	Travel Agency And Tour Operations Management	2017	<ul style="list-style-type: none"> ➤ Students learn about the different political regimes in Southeast Asian nations. ➤ Comprehend on the contemporary political and economic conditions in Southeast Asian countries ➤ Analyse the reasons to address some of the

4	T 303	Airline Ticketing And Information Management	2017	<ul style="list-style-type: none"> ➤ Students acquaint knowledge on Opening of Japan and its early western contacts. ➤ Knows Japan's militarization, Russo Japanese war and the First World War ➤ Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations. 	
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4. Centre for Extension Studies

5. Centre for Gandhian Studies

6. Centre for Women's Studies

	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1	SVUWS-105a	Gender, Environment, Climate Change & Livelihood	2017	<ul style="list-style-type: none"> ➤ This course builds theoretical base required for classification Gender Roles and livelihood of rural and tribal women. ➤ Impart skills and knowledge for developing Sustainable Environment and Livelihood Management systems with gender mainstreaming. 	

2	SVUWS-105b	Gender Society and Power Relations	2017	<ul style="list-style-type: none"> ➤ This course Insights on Gender Disparities within the Family, Economy, Education, Political and Legal Systems, understanding of social dynamics and power relations to perform the society and acquired gender sensitized skills. 	
3	SVUWS-106a	Human Values And Ethics –I	2017	<ul style="list-style-type: none"> ➤ The course is to enable students to develop amoral values and ethics for holistic approach of human development. 	
4	SVUWS-106b	Leadership values	2017	<ul style="list-style-type: none"> ➤ This course instill skill and domaine knowledge required for hands-on leadership learning experience focusing on leadership as an outgrowth of universal values that will help as effective and ethical leaders. 	
5	SVUWS-205a	Capacity building and leadership Training	2017	<ul style="list-style-type: none"> ➤ Enhance Knowledge and skills among students in designing and organization of suitable capacity 	
6	SVUWS-205b	Gender & Media	2017	<ul style="list-style-type: none"> ➤ Students learn to Critical analysis of Gender representation and socio-cultural mechanism on media 	
7	SVUWS-206a	Human values & Professional Ethics –II	2017	<ul style="list-style-type: none"> ➤ To develop values and professional ethics in an organization and society. 	
8	SVUWS-206b	Familial values and Ethics	2017	<ul style="list-style-type: none"> ➤ To apply the skills of theory in practice with families and children to understand the family values and ethics 	

9	SVUWS 301	Gender, Science & Technology	2017	<ul style="list-style-type: none"> ➤ Students acquire skills on Approaches to applying Gender in Science and Technology to create Gender Management System. 	
10	SVUWS 304d	Women's participation in Agriculture & Allied sectors	2017	<ul style="list-style-type: none"> ➤ To understand the Role of Women in Agriculture and allied fields and Policies and Programmes for Women in Agriculture importance's in our country and to know the possible oppournities to create agri-business. 	
11	SVUWS 305a	Gender Sensitization & Training	2017	<ul style="list-style-type: none"> ➤ To equip the students on the capacities to raise gender sensitivity to reduce felinity and masculinity and ➤ To important knowledge on the appropriate actions to be taken for sustenance of gender equal society 	
12	SVUWS 305b	Gender Identity and Leadership	2017	<ul style="list-style-type: none"> ➤ Provides knowledge about social process and cultural understanding. It also develops a clear and precise conceptual clarity on gender and leadership. 	
14	SVUWS 305c	Women and Governance	2017	<ul style="list-style-type: none"> ➤ To enable the students to understand the Women and Governance in the Indian context 	
15	SVUWS 404c	Multimedia systems	2017	<ul style="list-style-type: none"> ➤ Hands on experience on Multimedia: media and Data Streams. ➤ To understand Multimedia operating and Communication Systems. 	

16	SVUWS 404d	Reproductive Health and Family Life Education	2017	<ul style="list-style-type: none"> ➤ Create knowledge about Reproductive Health and Communicable Diseases ➤ Awareness on Reproductive Health Care Services, Policies & Programmes 	
17	SVUWS 405a	Women & Globalization	2017	<ul style="list-style-type: none"> ➤ To create awareness among the students on the ongoing process of globalization; ➤ To analyze the impact of globalization on feminization of labour force, low wages and Income gender inequalities 	
18	SVUWS 405b	Technical communication and computer ethics	2017	<ul style="list-style-type: none"> ➤ Establish skills on Technical Writing, Computer Ethics, Hacking and Hacker Ethics computer crimes in gender perspective. 	
19	SVUWS 405c	Gender & Mass Communication	2017	<ul style="list-style-type: none"> ➤ To provides a clear and precise clarity about gender status in contemporary society by referring the participation of women in mass communication 	

7. Econometrics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1	EMT 101	MicroeconomicTheoryI	2017	<ul style="list-style-type: none"> • The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. • The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face. • Microeconomics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms. • Microeconomics shows conditions under which free markets lead to desirable allocations. 	

2	EMT 102	Macroeconomic Theory I	2017	<ul style="list-style-type: none"> • Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income, analyse the various income identities with government and international trade, define the concept of green accounting. • Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination. • Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyse the theories of absolute and relative income hypotheses. • Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI. CO5. Illustrate 	
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3	EMT 103	Mathematical Methods	2017	<ul style="list-style-type: none"> • Formulate mathematical models describing the dynamics of economic systems. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations. • Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm. • Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and 	
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4	EMT 104	Practical I	2017	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 Able to find Inverse of a Matrix, System of Simultaneous Linear Equations and Cramer's Rule method.</p>	
5	EMT 105	StatisticalMethods	2017	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis.</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 formulate Statistical Methods describing the dynamics of economic systems such as production function analysis and solve econometric analysis of underlying data use with knowledge</p>	
6	EMT 106	HumanValuesandProfessiona lEthics-I	2017		
7	EMT 201	MicroeconomicTheoryII	2017	Course Objectives: The microeconomic theory is to analyze how individual decision-makers, both consumers and producers,	

8	EMT 202	Macroeconomic Theory II	2017	<p>CO1 The overarching goals of macroeconomics are to maximize the standard of living and achieve stable economic growth</p> <p>CO2 The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more.</p> <p>CO3 The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance.</p> <p>CO4 Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation –</p>	
9	EMT 203	Basic Econometrics	2017	<p>CO1 Adequate competency in the frontier areas of economic theory and methods.</p> <p>CO2 Formulation and estimation of a multiple regression model.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all models</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Estimation of system of equations estimation of panel</p>	

10	EMT 204	Practical II	2017	<p>CO1 Students can Identify Inter industrial relationships using Input-output analysis,</p> <p>CO2 analyse maximization of profits and minimization of costs can evaluate using Linear Programming,</p> <p>CO3 Analyse relationship of economic variables using simple and multiple regression models which are covered in basic Econometrics</p> <p>CO4 Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical</p>	
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11	EMT 205	Mathematical Economics	2017	<p>CO1 Students can deal Mathematical calculation of static optimization, Application of Lagrange's method and also student can evaluate Differential Equations and with Economic Applications.</p> <p>CO2 Able to estimate and interpret Inter industrial relationships using Input-output analysis, also analyse maximization of profits and minimization of costs of the firms using Linear Programming method</p> <p>CO3 Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.</p> <p>CO4 Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market</p>	
12	EMT 206	Human Values and Professional Ethics II	2017		

13	EMT 301	<i>IndianEconomy</i>	2017	<p>CourseOutcomes:Attheendofthecourse, thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p>	
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14	EMT 302	<i>Economics of Insurance</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development</p>	
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15	EMT 303	<i>Advanced Econometrics</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Concepts of Heteroscedasticity & Multicollinearity. Possible reasons behind the presence of Heteroscedasticity & Multicollinearity. Skill to judge the reliability of estimation in case of violation of basic assumptions for the application of ordinary linear regression method.</p> <p>CO2 Concepts of Autocorrelation reasons behind the presence of Heteroscedasticity & Multicollinearity. Describe the variance/covariance matrix for the regression errors under the assumption that the errors are correlated</p> <p>CO3 Apply modern econometric methods covering time series analysis, financial econometrics, microeconometrics,</p>	
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16	EMT 304	<i>Computer Applications and Data Analysis</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will get basic knowledge of computers i.e., block diagram, evolution of computer, input/output devices, storing information in computer etc.</p> <p>CO2 At the end of this course student will gain Examine spreadsheet concepts and explore the Microsoft Office Excel environment. Import and export data.</p> <p>CO3 Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas. Perform analysis tasks using Data analysis pack</p> <p>CO4 Student gained and evaluate Econometric Methods such</p>	
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17	EMT 305	<i>PublicFinance</i>	2017	<p>.</p> <p>CourseOutcomes:Attheendofthecourse, thestudentwillbeableto</p> <p>CO1 Understand the sources of finance both public and private, demonstrate the role of government to correct market failures and possible advantage of public financing</p> <p>CO2 Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.</p> <p>CO3 Understand the possible burden, benefits and distribution of various types of taxes among various classes of people, know the general trend and impact on general welfare and arouse them to suggest good and bad tax system.</p> <p>CO4 Understand the needs of public borrowing from all possible sources to meet necessary public</p>	
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18	EMT 306	<i>Financial Institutions and Markets</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2 Effectively narrate the kinds and components of money with its regulatory system, be aware of the functions, objectives and limitations of commercial banks.</p> <p>CO3 Identify the existence and development of non-banking financial institutions, know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.</p> <p>CO4 Understand the conditions of financial markets and its</p>	
19	EMT 307	<i>Practical III</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will gain Examine spreadsheet. Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas.</p> <p>CO2 Perform analysis tasks using Data analysis pack using MS-Excel.</p> <p>CO3 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyse and conclude using SPSS Package</p> <p>CO4 Student will able to test of Multicollinearity,</p>	

20	EMT 308	IntroductiontoEconometrics	2017	<p>CO1 students will have adequate competency in the frontier areas of economic theory and methods</p> <p>CO2 Use basic econometric estimation techniques such as Ordinary Least Squares to estimate bivariate and multivariate regression models.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all model.</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Students will acquire additional specialization topics are</p>	
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21	EMT 309	IndianEconomy	2017	<p>CourseOutcomes:Attheendofthecourse, thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p>	
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22	EMT 310	Economics of Insurance	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development</p>	
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23	EMT 401	<i>International Trade and Finance</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Identify the basic difference between inter-regional and international trade, understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>CO2 Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>CO3 Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.</p> <p>CO4 Show the importance of maintaining equilibrium in the</p>	
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24	EMT 402	<i>Environmental Economics</i>	2017	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Realize the importance and influence of environment on the economy including the quality of manpower. Arouse their feelings to make cleaner environment so as to achieve harmonious development.</p> <p>CO2 Understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries.</p> <p>CO3 Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean.</p> <p>CO4 Understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of</p>	
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8. Economics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ECO-101 & 201	Micro Economics Analysis – I & II	2017	<ol style="list-style-type: none"> 1. Graduate Consulting Analyst. Graduate Recruitment Bureau. 2. Economic Consultant (Public Policy). 3. NERA Internship -Industry Research Analyst. Research Fellow. 4. Graduate Economic Consulting Internship, Economist, Customer Experience Strategy.
2	ECO-102 & 202	Macro Economics Analysis – I & II	2017	<ol style="list-style-type: none"> 1. Work for a central bank of financial institutions. 2. Work as a consultants. 3. work in banking sector.
3	ECO-103&203	Public economics &Federal Finance	2017	<ol style="list-style-type: none"> 1. Assistant commercial Tax Officers. 2. Industrial finance officers. 3. Bill collectors.
4	ECO-104&204	Mathematical Methods in Economics – I and Statistical Methods in Economics	2017	<ol style="list-style-type: none"> 1. Assistant Statistical officers. 2. Bossiness firm consultant. 3. Market research Analyst. 4. Financial analyst. 5. Investment manager.

				6. International trade specialist.
5	ECO 105(a)	Fundamentals of Computer	2017	1. Digital Assistants. 2. Office Computer operators.
6.	ECO 105(b)	Urban Economics	2017	1. Senior urban economist. 2. International urban Economist. 3. Senior program Research analyst. 4. Urban environmental impact officer.
7.	ECO 105(c)	Welfare Economics	2017	1. Policy maker. 2. Administrator. 3. Welfare officer in Sachivalyam. 4. Admin in Sachivalayam.
8.	ECO 106(a)	Economics of Environment	2017	1. Environmental pollution officer. 2. Environmental consultants. 3. Environmental pollution planning and consultants. 4. Environmental conservation / Advocacy.
9.	ECO 106(b)	Demography	2017	1. National Sample Survey officers. 2. Census Survey Officers. 3. Chief planning officers.
10.	ECO 107	Human Values and Professional Ethics -I	2017	1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed

				<p>by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
11	ECO 205(a)	International Trade: Theory and Policy	2017	<ol style="list-style-type: none"> 1. International trading officers. 2. Export and import Officers. 3. Shares consultants. 4. Commercial desk manager. 5. Global trade Advisory.
12	ECO 207	Human Values and Professional Ethics -II	2017	<ol style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	ECO 301	Economics of Growth and Development	2017	<ol style="list-style-type: none"> 1. Project Coordinator. 2. Recreation manager. 3. Programme Director. 4. Social and community manager.

18	ECO 302	Indian Economy	2017	<ol style="list-style-type: none"> 1. NSSO. 2. Economic Survey directors.
19	ECO 304 (a)	International Finance	2017	<ol style="list-style-type: none"> 1. Financial Advisors. 2. Financial officers.
23	ECO 304	Communication and Soft Skills	2017	<ol style="list-style-type: none"> 1. Skill development coordinators. 2. Public relation officers. 3. Marketing and Advertising. 4. Media. 5. Meeting and event planning.
26	ECO 401	Rural Development	2017	<ol style="list-style-type: none"> 1. MGNREGA Programme officers. 2. District Coordinators. 3. Institutional building officers.
27	ECO 402	Financial Institutions and Markets	2017	<ol style="list-style-type: none"> 1. Corporate finance. 2. Financial planning officers.
28	ECO 403 (a)	India's Economic Reforms	2017	<ol style="list-style-type: none"> 1. Planning & Development Officers
29	ECO 404 (c)	Entrepreneurship and Skill Development	2017	<ol style="list-style-type: none"> 1. Business consultant. 2. Research and development. 3. Recruiter. 4. Sales managers.
30	ECO 404 (d)	Labour Economics	2017	<ol style="list-style-type: none"> 1. Labour officers. 2. Labour relations officers. 3. Labour relations assistant.

				4. Construction estimators
31	ECO 305 (c)	Economics of Insurance	2017	<ol style="list-style-type: none"> 1. Insurance Agents. 2. Loan processor. 3. Loss control officers. 4. Risk managers.
33	ECO 405 (a)	Human Resource Development	2017	<ol style="list-style-type: none"> 1. Human resource recruiter. 2. Performance management and development. 3. Employees training officers. 4. Organizational development officers.

9. Education

10. English

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1)	101:	Poetry-I	2017	<ul style="list-style-type: none"> • An understanding of the evolution of English poetry across ages. • May inspire poetic creativity 	

2)	102:	Drama-I	2017	1.Perceive the nuances of performance 2.Recognize the transformation of human experiences into dramatic experiences.	
3)		:Fiction-I	2017	1. Aesthetic and literary merits of the novel 2. The conditions of the age and the influence	
4)	104	:Prose-I	2017	1. Understand the genre of essay 2. Imbibe the deeper human values implied in the essay.	
5)	106:	Human Values and Professional Ethics-I	2017	1. Realize the necessity of practicing Human values and Ethics in all walks of life including the profession they opt for 2. Understand Bhagvad Gita as a guide for modern lifestyle	
6)	201	:Poetry-II	2017	Sensitizes the students on the classical and contemporary poetic ethos Raises student awareness on movements like Modernism, War Poetry, Women's poetry, Symbolism etc,	
7)	202	:Drama-II	2017		

8)	203	:Fiction-II	2017	<ol style="list-style-type: none"> 1. The great works of major novelist of modern age 2. The ability to understand the technique of the Novel 	
9)	204	:Prose-II	2017	<p>After the completion of the course the students are able to</p> <ol style="list-style-type: none"> 1. Know the working mechanism of Feminism and socialism 2. Know the mind and strategies of Victorian essayists 3. Know the importance of culture in the lives of Victorian people <p>Know the importance of being human in their dealings with the fellow beings</p>	
10)	205:	English Language Teaching	2017	<ol style="list-style-type: none"> 1. Understand the importance of language lab, teaching materials and audio-visual aids in the learning and teaching of English. 2. Know to test and testing components of language tests and examinations and evaluation procedures 	

11)	301	: Indian English Literature-I	2017	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the merits of Indian English writings and drawbacks if an 	
12)	302:	American Literature-I	2017	<ol style="list-style-type: none"> 1. An idea of English literature in America 2. Familiarity with the literary movements 3. Knowledge about concepts like Puritanism, transcendentalism, symbolism, impressionism etc. 	
13)	303:	Literary Criticism-I	2017	<p>Equips the student with the evolution of English Literary Criticism from Aristotle to early twentieth century</p> <p>Helps students map the genealogy of Western canonical critical texts</p>	
14)	304 (A) 304(B): 304 (C): 305 (D):	:Comparative Literature Short Story Women's Writings Indian Literature in English	2017	<ol style="list-style-type: none"> 1. Understand national and world literatures and the need of comparative studies in the global world. 2. Understand the ways of comparative analysis <p>OUT COMES:</p> <p>Perceives creativity as a tool of empowerment and unity amongst women.</p> <p>Understand gendered spaces in creativity and the genealogy of</p>	

15)	305 (A):	Communicative English	2017	<p>Understand the significance and importance of Communication in English in the present day world</p> <ol style="list-style-type: none"> 1. Understand communication process, the different types and barriers of communication 	
16)	305(B):	English for Media	2017	<ol style="list-style-type: none"> 1. Understand the use of language in different situations in writing for the media 2. Learn the oral skills necessary for media like interview skills 	
17)	05(C):	3An Introductory Course to Literature	2017	<ol style="list-style-type: none"> 3. Understand the use of language in different situations in writing for the media 4. Learn the oral skills necessary for media like interview skills 	
18)	401:	Indian English Literature-II	2017	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the poetic features of Indian English poetry 	

19)	404(A): 404(B): 404(C): 404(D):	Translation: Theory and Practice Subaltern Studies Post-Colonial Literatures World Classics in English Translations	2017	1. Know the concepts of dalitism, feminism, marginalism and Subaltern aspects with relevant theories 2. Appreciate and understand the struggles and sorrows of subalterns	
20)	405(A): 405(B): 405(C):	Soft Skills Indian Literature in English Translation Contemporary Translation	2017	1. Will learn about morals and responsibilities 2. Learn to acquire the enduring values embedded in the great literary works of our writers	

11. Linguistics

S.No	Course Code	Name of the course	Year of introduction	Activities/content with direct bearing on employability/entrepreneurship/skill development	link to the relevant document
1	101	History of Linguistics	2017	i.Learnt about the early linguistic studies, prescriptive Vs traditional grammar.	Proof enclosed

				<ul style="list-style-type: none"> ii. The students will able understand major linguistic tools of modern times. iii. Understanding linguistic contributors in the history of linguistics. 	
2	304E	Language and communication	2017	<ul style="list-style-type: none"> i. The student knows aim, theory and types of communication ii. Identify levels and features of communication. III. The student will able to understand information and language and environment. 	
3	305 C	Language Technology	2017	<ul style="list-style-type: none"> i. Gained knowledge on language technology and characteristics of speech. ii. The students are able to analyze writing, printing and digital language technologies. iii. The student knows studies on language technology. 	
4	404E	Applied Linguistics	2017	<ul style="list-style-type: none"> i. The students will enrich the knowledge in theoretical and applied linguistic areas. ii. Skill development in lexicography and translation. iii. The students knows language teaching and language learning. 	

12. Hindi

13. History

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	HST 101	History of India Up to 650 A D	2017	<ul style="list-style-type: none">➤ Students will have a familiarity with the sources, different political, social, economic, cultural and religious traditions of the Indian subcontinent upto 650 C.E.➤ Student will also be well versed with different analytical approaches and models of interpretation
2	HST 102	History of Indian Polity and Economy, 1206-1757	2017	<ul style="list-style-type: none">➤ Students can familiarize in understanding the continuity with changes in all spheres of history, polity and economy under the Delhi sultanates.➤ Students can understand thoroughly the Mughal conquest of India, their rule, polity and legacy.
3	HST 103	History of Modern India, 1757 –	2017	<ul style="list-style-type: none">➤ Student can gain knowledge on the English

		1947		East India company rule and their reforms.
4	HST 104	History of Modern World, 1900-1945	2017	<ul style="list-style-type: none"> ➤ Student can gain the knowledge on the history and consequences of the World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism. ➤ Students will understand International Relations during 1919-39. ➤ Students can understand thoroughly about the Second World War and its impact.
5	HST 105 (A)	History of Andhrasupto 1336 A D	2017	<ul style="list-style-type: none"> ➤ The study of comprehensive history of the country is incomplete without the study of regional history. ➤ Regional history is becoming more and more popular, for it has inherit potential of tapping varied kinds of sources for understanding the divergent aspects of local heritage and culture. ➤ The students can develop thorough understanding on Ancient Andhra history and culture.
6.	HST 105 (B)	History of World Civilizations	2017	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and

				<p>characteristic features of the ancient world Civilizations, its regional extent and variation.</p> <ul style="list-style-type: none"> ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
	HST 106 (A)	Theoretical Concepts of Tourism	2017	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
7.	HST 106 (B)	History of Medieval World	2017	<ul style="list-style-type: none"> ➤ Student can gain thorough knowledge on the world in medieval ages and rise of Christianity ➤ Will understand Transition to Modern Age ➤ Possess knowledge on French Revolution and its Impact
8.	HST 107	Human Values and Professional Ethics-I.	2017	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional

				<p>ethics which are essential for positive human behavior and actions in our daily lives.</p> <ul style="list-style-type: none"> ➤ They inspire the fundamental goodness of human beings and society at large
9.	HST 201	History of India 650-1206 A D	2017	<ul style="list-style-type: none"> ➤ Students can develop comprehensive knowledge on political, social, economic, religious and cultural history of early medieval India , regional polities and its impact ➤ Can also able to understand the circumstances lead to the invasions of Arabs and foundation of Muslim rule in India
10	HST 202	Social and Cultural History of India, 1206-1757	2017	<ul style="list-style-type: none"> ➤ Students can gain comprehensive knowledge on the freedom movement from its inception upto independence in India ➤ The students can also able to understand the role of national congress and prominent leaders of national movement, problems and perspective in the progress of freedom movement
111	HST 203	Freedom Movement in India,	2017	<ul style="list-style-type: none"> ➤ The students can understand the Cold War

		1857 –1947		<p>and its Impact</p> <ul style="list-style-type: none"> ➤ Possess knowledge on UN and the Concept of World Peace ➤ Gain the knowledge on the Disintegration of Socialist Block
12	HST 204	History of Contemporary World, 1945-2000	2017	<ul style="list-style-type: none"> ➤ This course provides comprehensive knowledge on the last imperial political formation in South India and the history of Vijayanagara, Bahmani and contemporary pretty powers. ➤ It helps to understand with the context of polity, economy, culture, religious and ideological changes
13	HST 205	<p>A) History of Vijayanagara Empire</p> <p>B) History of Modern Africa</p>	2017	<ul style="list-style-type: none"> ➤ Students will be familiar with Road to Independence in Africa ➤ They will understand development and underdevelopment in Africa
14	HST 206	<p>A) Historical Application of Tourism in India</p> <p>B) Women Studies in Modern India</p>	2017	<ul style="list-style-type: none"> ➤ The students can familiarize the knowledge needed to excel in tourism activities. ➤ It will equip the students with the solid foundation to build upon the fundamentals, useful skills and expertise that can assist

				employment in Tourism Industry.
15	HST 207	Human Values and Professional Ethics-II	2017	<ul style="list-style-type: none"> ➤ The student can understand thoroughly the importance of Women Studies ➤ Will understand the role of Women in Hinduism and Islam ➤ Also gain knowledge about the Women participation in various movements in India

14. Human Rights and Social Development

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HR 101	Human Rights: Concepts and Theoretical Perspectives	2017	<ol style="list-style-type: none"> 1. To Expose the students about nature and concept of Human Rights. 2. To apprise the students about the Liberal. Marxian prerspectives. 3. To expose the students that alternative, third world and Indian Perspectives of Human Rights,
2.	HR 102	Human Rights in India the constitutional and Legal Framework	2017	<ol style="list-style-type: none"> 1. Students to know the Indian Constitution and Human Rights. 2. To understand the Judiciary and Human Rights. 3. To understand about Criminal Justice system in

				India.
3.	HR 103	Human Rights and Duties Education	2017	<ol style="list-style-type: none"> 1. To expose students about the importance of Human Rights and Duties education. 2. To apprise the students about the target groups for Human Rights 3. To expose the students about the content of Human Rights Education.
4.	HR 104	Rights and the implementation Machinery	2017	<ol style="list-style-type: none"> 1. To expose the students about the implementation machineries at National Level and International Level. 2. The students understand about how the problems in Accessing Justice through Courts and Tribunals. 3. To expose the students that statutory bodies of Human Rights.
5.	HR 105 A	Working Class and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To understand the students about the status of working class, concept and issues. 2. To expose the student about the basic rights and duties of various sections. 3. To understand the Indian Constitutional Frame

				work.
6.	HR 105 B	Human Rights Education, Teaching and Training	2017	<ol style="list-style-type: none"> 1. To expose the student about the origin, UNO and Human Rights education policies. 2. To apprise the students about the principles and practice in teaching of Human Rights Education. 3. To understand the student about training aspects of Human Rights.
7.	HR 106 A	Human Rights Activism and Role of NGOs	2017	<ol style="list-style-type: none"> 1. To expose the students about the different types of Human Rights Activisms. 2. To identify the student that the different Types of NGO's and their role for promoting the Human Rights.
8.	HR 106 B	Social Movements and Human Rights in India	2017	<ol style="list-style-type: none"> 1. To expose the students about the role of NGOs for protecting human rights. 2. To Understand the student about the Political Movements, Ecological and Environmental Movements of Human Rights. 3. To apprise the student about the various types of Social and Political Reforms of Human Rights.

9.	HR 107	Human Values and Professional Ethics - I	2017	<ol style="list-style-type: none"> 1. To expose the student about the concept and nature of human values. 2. To understand the student about nature of Values, Ahimsa and various religion theories. 3. To assess the student about various Crime and Theories of punishments
10.	HR 201	Human Rights and Indian Polity	2017	<ol style="list-style-type: none"> 1. To expose the students about the concept of basic structure of Indian Polity, administrative structure in India. 2. To apprise the student about the role of People's Agencies for protecting and promotion of human rights in India. 3. To understand the students about the Legislative Procedure and implementation process in India.
11.	HR 202	Emerging Dimensions of Human Rights	2017	<ol style="list-style-type: none"> 1. To expose the students about the Human Rights and Duties of Non-State Armed Groups and Commercial Corporations. 2. To understand the students about the rights of future generation. 3. To apprise the students about the Human Rights

				and Changing Dimension of State Sovereignty and Humanitarian' Intervention.
12.	HR 203	Human Rights: The International Context	2017	<ol style="list-style-type: none"> 1. To understand the students about the evolution of human rights and UN charter of human rights. 2. To expose the students about regional dimensions of human rights and special conventions on human rights. 3. To understand the students about International conventions on human rights and duties.
13.	HR 204	Research Methodology, Statics and Computer Applications	2017	<ol style="list-style-type: none"> 1) Student to Know Scope of Social Research. 2) To Understand Data Analysis. 3) Understand About Types of Data Collections
14.	HR 205 A	Human Rights – The Socio Economic Context	2017	<ol style="list-style-type: none"> 1. To expose the students about the socio, economic background of human rights. 2. To apprise the students about human rights of vulnerable groups. 3. To understand the students about the basic human need for development with respect to human rights.
15.	HR 205 B	Societal Problems of Human Rights in India	2017	<ol style="list-style-type: none"> 1. To understand the student about the societal problems of human rights.

				<ol style="list-style-type: none"> 2. To understand the students about the social problems of minorities, scheduled caste and scheduled tribes. 3. To expose the students about Regionalism, terrorism.
16.	HR 206 A	Human Rights and Criminal Justice System	2017	<ol style="list-style-type: none"> 1. To expose the students about Rights of Inmates of Prisons and Custodial Homes. 2. To understand the students about the Right to Legal Aid, Access to Justice and Speedy Justice. 3. To expose the students that the problems of human rights.
17.	HR 207	Human Values and Professional Ethics - II	2017	<ol style="list-style-type: none"> 1. To expose the student about the concept and nature of human values. 2. To understand the student about nature of Values, Ahimsa and various religion theories. 3. To assess the student about various Crime and Theories of punishments.
18.	HR 301	Social Movements and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the student about conceptual perspectives of social movements and human

				<p>rights.</p> <ol style="list-style-type: none"> To apprise the students about the social, political and religious reforms movements and human rights. To expose the students that the role of International and National Institutions in promoting Human Rights.
19.	HR 302	Science, Technology, Human Rights and Duties	2017	<ol style="list-style-type: none"> Understand the basic concept in science and technology and also about Indian perspective on science and technology. Ability to know about the Right to Adequate Food, Agricultural, Biotechnology Impact of on Agriculture, Food Biotechnology and Revolution in Information Technology. Analyse know rights to health and application of Biotechnology in Medicine and also about Intellectual Property Rights. Assess the use of natural resource Environmental Biotechnology and Use Technologies
20.	HR 303 A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2017	<ol style="list-style-type: none"> To understand the students that the issues for peoples movements and public advocacy on

				<p>human rights and duties</p> <ol style="list-style-type: none"> 2. To understand the students on extension work with respect to human rights. 3. To understand the students about the uses of NGOs fact finding and uses of information media.
21.	HR 303 B	Socially/Economically Disadvantaged people and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the students about the concept of the Constitutional Safeguards and Special Protection Laws and Policies. 2. To understand the students about the concept of the disadvantaged people in the Indian Society. 3. To understand the students about the Institutional Mechanisms for protecting the human rights of the disadvantaged groups.
22.	HR 303 C	Human Duties and Responsibilities	2017	<ol style="list-style-type: none"> 1. To understand the student about the concept of human duties and responsibilities. 2. To expose the student about human values and values of humanism. 3. To apprise the students about evaluation of human duties.

23.	HR 303 D	Children and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To understand the student about the concepts of Child Labour and protecting norms at National and International level. 2. To apprise the student that the status of children in Indian society with respect to human rights. 3. To understand the students about the National and International mechanisms for protecting the child rights.
24.	HR 304	Soft Skills	2017	<ol style="list-style-type: none"> 1. To understand the student that the concepts of soft skills with respect to human rights. 2. To understand the student in employability skills in human rights aspects. 3. To expose the students that the professional skills for team building and problem solving.
25.	HR 305 A	Historical and Philosophical Perspectives of Human Rights	2017	<ol style="list-style-type: none"> 1. To expose the student that the a basic understanding to the concepts of human rights, human values, dignity, justice and equality. 2. To understand the students that the theories of human rights in various inter disciplinary dimensions.

				3. To apprise the student that the concept of Magna Carta-Bill of Right-French and American- Declaration and Uncharted on human rights.
26.	HR 305 B	Human Rights and Duties in India	2017	<ol style="list-style-type: none"> 1. To understand the students about the concepts of Constitutional Human Rights and Responsibilities. 2. To apprise the students that Extra-ordinary situations and human rights in India. 3. To understand the violations of rights in present Civil Society in India.
27.	HR 401	Human Rights in Andhra Pradesh	2017	<ol style="list-style-type: none"> 1. To expose the students about various Human Rights Movements at National and State (Andhra Pradesh) Level. 2. To understand the concept of social stratification and problems of Caste and Un-touchability. 3. To expose the students that the gender inequality and various gender violation in Andhra Pradesh.
28.	HR 402	Development, Trade and Human Rights	2017	<ol style="list-style-type: none"> 1. To understand the student about the concept of human rights of various vulnerable groups at National and International level.

				<ol style="list-style-type: none"> 2. To apprise the student about the Trade related human rights violations and Trade development. 3. To understand the student about the role of human rights in development.
29.	HR 403 A	International, Humanitarian and Refugee Laws	2017	<ol style="list-style-type: none"> 1. To expose the students about the concepts of International Humanitarian Law and Implementation enforcements of IHL. 2. To apprise the student about the concept of International Refugee Law and protection under International Law. 3. To understand the students about solution to Refugee Problem.
30.	HR 403 B	Environment and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the student about the concept of Environment and rights to clean environment. 2. To apprise the students about the International regimes for protection. 3. To understand the students about the role of various agencies for protecting environment with respect to human rights.
31.	HR 403 C	Human Rights and Criminal Justice System	2017	<ol style="list-style-type: none"> 1. To expose the student about the concept of the

				<p>International Human Rights systems.</p> <ol style="list-style-type: none"> 2. To understand the student about the International Organisations for protecting the Human Rights. 3. To understand the students about the UN Organs and Human Rights.
32.	HR 403 D	Minorities and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To student understand that the concept of evolutionary perspectives and Institutional mechanisms for protection of Minorities. 2. To expose the student that rights and duties of Minorities under in the Indian System. 3. To apprise the student that the Minorities and human rights challenges.
33.	HR 405 A	Development, Globalization and Human Rights	2017	<ol style="list-style-type: none"> 1. Understand to role of Human Rights in Development and various theories of development. 2. Analyses the new international Economic Order (NIEO), WTO GATT and International Trade and Human Rights Perspective in India. 3. Evaluvate the Globalisation and its impact on agriculture, environment, labour, women, culture and health.

				4. Know about the Transnational Corporations (TNCs) and Human Rights violations and Impact of GATT-WTO on sovereignty.
34.	HR 405 B	Women and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the students about the concept or the status of women in various sectors with respective human rights. 2. To expose students about the National and International norms for protection at International and National level. 3. To apprise the students about the Institutional mechanisms for Protection of rights of women.

Human Rights and Duties

S.No	Course Name	Course Code	Year of Introduction	Description of the course addressing Professional Ethics
1	Human Values and Professional Ethics-I.	HR -106	2017	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large.

2	Human Values and Professional Ethics-II	HR -205	2017	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large.
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15. Law

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CO -101	Mass Media Law	2017	<ul style="list-style-type: none"> a. Have a detailed and sophisticated understanding of the general principles governing freedom of speech, the public interest and the media; b. Have a detailed, technical and specialised understanding of the constraints imposed on the media in the reporting of court proceedings; c. Have developed the ability to independently understand, research and critically analyse legal and scholarly developments that contribute to professional practice in the area of media law; and d. Have a detailed, technical and specialised

				<p>understanding of defamation law in India and comparatively;</p> <p>e. Have developed expert knowledge of the practical operation of defamation law in India and comparatively;</p>
2	CO-102	Public Utilities Law	2017	<p>a. government policy in regard to such utilities in general and to each utility in particular,</p> <p>b. The growth and evolution of the public utilities;</p> <p>c. patters of the laws of incorporation and</p> <p>d. powers, functions and liabilities of the public utilities vis-a-vis their employees, consumers and others.</p>
3	CO- 103	Law and Social Transformation in India	2017 2017	<p>a. Critically analyse the Law as an instrument of social change and product of tradition and culture</p> <p>b. Explore the nature and function of Law as an institution and process interlinked with the social and economical philosophy of education.</p> <p>c. Examine development of law from historical processes and how for the a touch of modernization and value can be added to legal system</p> <p>d. To analyse the different approaches of Law and</p>

				Justice
4	CO - 104	Indian Constitutional Law: The New Challenges	2017	<ul style="list-style-type: none"> a. Understand and interpret Constitution to address the emerging complex issues; b. Explore the various functional theories, doctrine and Constitutional principles working in the backdrop and its interplay with the emerging issues; and c. Examine the boundaries, limitations, of Constitution from different perspectives and explore the possible approaches of interpretation and understanding from the perspective of Law and Justice.
5	CO - 201	Union – State Finance Relations	2017	<ul style="list-style-type: none"> a. To understand India as development of complex federal structure (Quasi) federal and its strength and weaknesses; b. Explore the various functional theories, doctrine and Constitutional principles of federalism and its interplay under Indian Constitution; and c. To examine the area of conflicting interest between Union and State and primacy of Union over the State.
6	CO - 202	Constitutionalism,	2017	<ul style="list-style-type: none"> a. To explore the basic principles of

		Pluralism and Federalism		<p>Constitutionalism, different model of federalism and its interplay in the Indian legal system;</p> <p>b. To examine the adoption of, utility and justification of Constitutional model in India; and</p> <p>c. To analyse India as pluralist society and suitability of various model, approaches in India in functional aspects of comparison with other legal system.</p>
7	CO – 203	Judicial Process	2017	<p>a. Intended to highlight the role of court as policy maker, participant in the power process and as an instrument of social change.</p> <p>b. expose the intricacies of judicial creativity and the judicial tools and techniques employed in the process.</p> <p>c. Since the ultimate aim of any legal process or system is pursuit of justice, a systematic study of the concept of justice and its various theoretical foundations is required.</p> <p>d. Intends to familiarise the students with various theories, different aspects and alternative ways, of attaining justice.</p>
8	CO – 204	Legal Education and Research Methodology	2017	<p>a. Critically analyse the various research skill,</p>

				<p>especially in the field of law;</p> <p>b. To develop the skill of application of teaching methods in legal education</p> <p>c. To understand and analyse the various strength and weakness of teaching learning and research process for the field of law; and</p> <p>d. To develop the skill of utilising computer technology for Legal education and Legal research.</p>
9	CO – 301	Human Rights	2017	<p>a. Acknowledge the social and economic rights of workers, forced labour, child labour, bonded labour, slavery, trade union, social security, right to health, standard of living, protection of families etc.</p> <p>b. To gain and acquire the knowledge about cultural rights of indigenous population.</p> <p>c. Understand the third-generation solidarity right of various populations.</p> <p>d. Acknowledge the ideas and knowledge about Human right Protection system of United Nations in the light of Covenant of Civil and Political rights.</p>
10	CO – 302	National Security, Public Order and Rule of Law	2017	<p>a. Understand and interpret various provision and safeguards to protection national security;</p> <p>b. To explore the various approach of public order,</p>

				<p>importance of rule of law and different legislations;</p> <p>c. Balancing the civil liberties and power of state; and</p> <p>d. Explore the various functional institution like election commission, parliament and check and balance on the national importance.</p>
11	CO- 303	Practical Training	2017 2017	<p>a. Critically apply the understanding and application of legal research principles to legal research writing;</p> <p>b. To explore the various stages and its application for the practical record work;</p> <p>c. To have the development of idea, and its application;</p> <p>d. To have the ability to provide the original and non-plagiarised work to the existing field of knowledge</p> <p>e. Legal aid Camps and Legal Literacy Programmes, Court Observation work.</p> <p>f. On the completion of the course students will develop an inclination towards research and academics.</p>
12	CO- 304a	Environment Protection and The Law	2017	<p>a. Study the relationship between environment and climate change as well as the role of law, judiciary,</p>

				<p>resolution mechanisms but the alternate energy solutions and how people are dealing with climate changes, environmental laws and implementation of available solutions.</p>
13	CO- 304b	Intellectual Property Rights Law	2017	<ul style="list-style-type: none"> a. To give philosophical underpinnings of traditional notion of property and IP • b. To examine the link between Industrial development & IP protection • To examine the conceptual development of IP concepts through judicial approach • c. To examine the impact of IP on economy, health and daily activities • d. To understand the basic principles enunciated in international agreements relating to IP
14	CO- 401	Dissertation and Viva-Voce	2017	<ul style="list-style-type: none"> a. Identify key research questions within the field of Demography on which you will carry out independent research. b. Manage your time effectively whilst working on your independent research. c. Demonstrate appropriate referencing and develop skills in other aspects of academic writing. d. Demonstrate knowledge and understanding of

				<p>report writing.</p> <p>e. Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research</p>
15	CO – 402a	Law of Consumer Protection	2017 2017	<p>a. Define provision under the Consumer Protection and Right to Information Act and apply them to situations accordingly</p> <p>b. Draft a consumer complaint with ease</p> <p>c. Confidently approach a Consumer Forum and get aware of the redressal mechanism</p> <p>d. To expose the students about Consumer Protection Laws;</p> <p>e. To develop the conceptual understanding of Consumer Protection regime.</p>
16	CO- 404 b	International Human Rights (MOOC / ONLINE COURSE)	2017	<p>a. Analyze and comment on key controversies surrounding the development of international human rights law</p> <p>b. Use conceptual tools to follow the developments of human rights law</p> <p>c. Be most effective in contributing to the</p>

				enforcement of international human rights law
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16. Library and Information Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	LIS-101	Foundation of Library and Information Science	2017	<ol style="list-style-type: none"> 1. Know the various types of libraries and their role in the society 2. Learn the Professional ethics and library Legislation in India 3. Understand LIS education in India and various library associations in India
2	LIS102	Knowledge Organization: Classification Theory	2017	<ol style="list-style-type: none"> 1.. Understand the definition, need and purpose of classification 2. Learn the Fundamental Categories, Facet Analysis, types of Isolates in all schemes of classification 3. Understand the Notation, trends and

				developments in Classification
3	LIS-103P	Knowledge Organization:Classification Practice	2017	<ol style="list-style-type: none"> 1.Learn the Dewey Decimal Classification Scheme 2. Get the skill regarding assigning the class numbers 3.Have knowledge on Tables and Schedules of DDC
4	LIS-104	Knowledge Management	2017	<ol style="list-style-type: none"> 1.Get an idea on the concepts of knowledge management, types of knowledge 2.Understand the knowledge creation models, knowledge transfer in E-World 3.know the tools for knowledge management and neural network and datamining
5	LIS-105	Introduction to Information Technology	2017	<ol style="list-style-type: none"> 1.Gain knowledge on the concepts of computer basics and Network technologies

				<p>2. Understand the concepts of Operating Systems, Programming Languages and types of softwares</p> <p>3. Learn the Database Management systems, steps in development of databases and get an idea on different library software packages</p>
6.	LIS-106	Human Values and Professional Ethics-I	2017	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	LIS-201	Information Sources and Services	2017	<p>1. Learn documentary and non-documentary sources and different types of information sources</p>

				<p>2. Know about the Indian and British National Bibliographies, and Electronic Books</p> <p>3. Understand the virtual reference service and translation Services</p>
8.	LIS-202	Knowledge Organization: cataloguing Theory	2017	<p>1. Understand the basic ideas on catalogue, forms of the catalogue, Main Entry and added entries</p> <p>2. Know the Canons, Principles and Laws of Cataloguing</p> <p>3. Gain the knowledge on different types of subject headings, Cooperative and Centralized cataloguing</p> <p>.</p>
9.	LIS-203P	Knowledge Organization: cataloguing Practice	2017	<p>1. Gain knowledge on Anglo American Cataloguing Rules</p> <p>2. Learn the preparation of Main entry and added entries for monographs and serial publications</p> <p>3. Gain the skills on preparation of entries on</p>

				cartographic materials, manuscripts and sound recordings
10.	LIS-204P	Meta data Standards- Practice	2017	<ol style="list-style-type: none"> 1. Know the Metadata and its types, standards 2. Learn the skills on KOHA Software 3. Learn the skills on MARC 21 and Dublincore
11	LIS-205	Library Management	2017	<ol style="list-style-type: none"> 1. Gain knowledge on meaning and purpose of management, Organizational Structures 2. Able to identify the factors behind selection, procurement and accessioning of documents 3. Gain knowledge on a circulation system suitable for a library, different budgetary methods and its standards, norms and principles
12	LIS-206	Human Values and Professional Ethics-II	2017	<ol style="list-style-type: none"> i. Student will know the values of ethics in various fields including medical, social and business ethics. ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. iii. Introduction of several Natural values to be

				performed by Humans to lead a good and Peaceful life.
13	LIS-301	Information Processing and Retrieval Theory	2017	<ol style="list-style-type: none"> 1.Understand the basic concepts on Information procession and Retrieval and various schemes on classification 2.Learn the Indexing Systems and Techniques and their Evaluation Criteria and Studies 3.Gain knowledge on Web based Information Retrieval Systems
14	LIS-302	Library Automation and Digital Library	2017	<ol style="list-style-type: none"> 1.Learn the basics of Library Automation, various modules of library automation software packages and their features 2.Gain knowledge on basic concepts and characteristics of digital libraries 3.Know about network and communication devices, digitization and metadata
15	LIS-303	Search and Search strategies	2017	<ol style="list-style-type: none"> 1.Gain knowledge on search strategies, various types of databases, internet searching tools 2.Understand Z39.50 protocol and Wide area information servers 3. 3.Learn the search engines and meta search engines.

16	LIS-304B	Internship	2017	<p>1. Attain skills on all types of sections and its maintenance in libraries in which they underwent training</p> <p>2. Get skills on maintenance of Digital Library</p> <p>3. Learn the skills on preservation and conservation of manuscripts and digitization.</p>
17	LIS-304C	Academic Library System	2017	<p>1. Know the basic objectives, growth and development of Academic Libraries in India, UK and USA</p> <p>2. Learn about an overview of higher education in India, UGC, its powers and functions and its role in the development of academic libraries</p> <p>3. Understand the total design of the building, techniques of financial management, and know the organization of library and information services needed by distance learners and special users</p>
18	LIS-305A	Information Literacy (OE)	2017	<p>1. Learn the concepts of Information Literacy and sources of Print and Electronic Information</p> <p>2. Get the skills on information access through INFLIBNET Network</p> <p>3. Able to understand the Internet and its search</p>

				techniques and Intellectual Property Right
19	LIS-401	Research Methodology	2017	<ol style="list-style-type: none"> 1. Understand the definition, need and purpose of various research methods 2. Get the knowledge on Research design, techniques and tools 3. Gain the skills on Data analysis and Interpretation of Data in SPSS.
20	LIS-402P	Software for Libraries-Practice	2017	<ol style="list-style-type: none"> 1. Attain knowledge on D Space, Greenstone Digital Library Softwares 2. Learn about Koha : Library Management Software, E-Resources, Directory of Open Access Journals, 3. Get an idea on designing of Web Page and Data Mining
21	LIS-403	Dissertation/Project Work	2017	<ol style="list-style-type: none"> 1. Gain Knowledge on how to select the theme for their work 2. Learn the writing styles, preparation of questionnaire, data analysis and interpretation and Citation styles 3. Get the skills on findings and conclusion in dissertation
22	LIS-403A	Management of Information System	2017	

				<p>1. Know the basic concepts in Management, and various methods of decision-making and its application to Library and Information Centers</p> <p>2. Understand the budgeting techniques and methods and policies and procedures</p> <p>3. Gain knowledge on system analysis, PERT/CPM</p>
23	LIS -404C	Information Processing and Retrieval: UDC and Indexing Practice	2017	<p>1. 1. Gain knowledge on Universal Decimal Classification</p> <p>2. Learn different Indexing systems</p> <p>3. Understand the design and development of thesaurus</p>
24	LIS-405-B	Technical Writing	2017	<p>1. Know the definition and types of technical writing</p> <p>2. Attain the idea on technical writing process and styles</p> <p>3. Get the skills on technical writing techniques, use of MS-Office for preparation and presentation of technical writing</p>

17. Mass Communication & Journalism

18. Performing Arts (Music)

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	162	MA Performing Arts(Music)	2017	PAM-105 (P) Compulsory Foundation in Music -1 Clear cut training of foundation in Carnatic Music	Proof Enclosed
2	162	MA Performing Arts(Music)	2017	PA-M 204 (P) Vilambakala Kritis Training to Perform slow tempo songs which is difficult rather than fast tempo songs	Proof Enclosed
3	162	MA Performing Arts(Music)	2017	PA-M 205 (p) Compulsory Foundation in Music -2 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
4	162	MA Performing Arts(Music)	2017	PA-M 302 Compositions in Rare ragas widening knowledge to perform rare ragas	Proof Enclosed
5	162	MA Performing Arts(Music)	2017	PA-M 303 Concert Ability to plan and execute a successful Carnatic concert Ability to create self employment opportunity	Proof Enclosed
6	162	MA Performing Arts(Music)	2017	PA-M 402 Ragam Tanam Pallavi Learn and inculcate the most creative part of Carnatic Music To help student to shape	Proof Enclosed

				out the creative rendering style of the student	
7	162	MA Performing Arts(Music)	2017	PA-M 403 Project work Introduce to the methodology of doing research in music and introducing to data collection, analysis etc and train up him to look into the facts based on evidences	Proof Enclosed
8	162	MA Performing Arts(Music)	2017	PA-M 404A Manodharma Sangeetha To enrich the knowledge of innovative music To educate the student to sing raga alapana neraval and Kalpanaswara which are the crucial Sections of creative music.	Proof Enclosed
9	162	MA Performing Arts(Music)	2017	PA-M 404C Compositions of Dance Repertoire Knowledge in application of music in other art fields like theatre, opera etc Knowledge to select and utilize ragas according to the theme and text.	Proof Enclosed

19. Philosophy

1.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
2.	101	Classical Indian Philosophy	2017	. 1The Student has applied the knowledge of classical Indian Philosophy. 2.The Student has analyzed the principles of

				classical Indian Philosophy
3.	102	Epistemology Indian	2017	<ol style="list-style-type: none"> 1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
4.	103	Logic Indian and Western	2017	<ol style="list-style-type: none"> 1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
5.	104	Western Philosophy- Greek and Medieval	2017	<ol style="list-style-type: none"> 1. The Student has known the important issues of Western Philosophy 2. The Student has understood the Principles of greek and medieval Philosophy
6.	105-A	Problems in Metaphysics	2017	<ol style="list-style-type: none"> 1. The Student has known the Problems of Metaphysics 2. The Student has understood the Principles of Metaphysics
7.	202	Ethics- Indian	2017	<ol style="list-style-type: none"> 1. The Student has known the Ethics in Indian Philosophy 2. The Student has understood the various Ethical Principles in Indian Ethics.
8.	203	Ethics –Western	2017	<ol style="list-style-type: none"> 1. The Student has known the Ethics in Western


				Philosophy 2. The Student has understood the Ethical theories of Western Philosophy
9.	204	Modern Western Philosophy	2017	1. The Student has known the Problems of Modern Western Philosophy 2. The Student has understood the thoughts of Modern Western Philosophers.
10. 9	205-A	Philosophy of Education	2017	1. The Student has known the Contents of Philosophy of Education. 2. The Student has understood the Educational aspects of Philosophy of Educatio
11. 1	207	Audit course (HVPE)	2017	1. The Student has known the essence contents of human values. 2. The Student has understood the Professional Ethics..
12. 1	301	Social and Political Philosophy	2017	1. The Student has known the contents of social Philosophy. 2. The Student has understood the Principles of Political Philosophy.
13.	302	Philosophy of Vedanta	2017	1 . The Student has known the Philosophy of Vedanta. 2. The Student has understood the Philosophical

				Doctrines of Vedantas
14.	303-A	Philosophical Approach to Gandhi	2017	<ol style="list-style-type: none"> 1. The Student has known the metaphysical issues of Gandhi. 2. The Student has understood the Gandhian Philosophy
15.	303-B	Philosophy of B.R.Ambedkar	2017	<ol style="list-style-type: none"> 1. The Student has analyzed the Philosophy of Ambedkar.. 2. The Student has applied the Philosophical aspects of Ambedkar.
16.	305-A	Philosophy of Value Education	2017	<ol style="list-style-type: none"> 1.The Student has known the importance of Education... 2. The Student has understood the Philosophical values for life.
17.	305-B	Sri Venkateswara Studies	2017	
18.	401	Phenomenology and Existentialism	2017	<ol style="list-style-type: none"> 1. The Student has analyzed the contents of Phenomenology.. 2. The Student has applied the Philosophical Principles of Existentialism
19.	402	Comparative Religion	2017	<ol style="list-style-type: none"> a.The Student has analyzed the aspects of Comparative Religion.. b. The Student has applied the Philosophical

				Principles of different Religions
20.	403-A	Philosophy of Jiddu Krishnamurti	2017	<p>1.The Student has known the Philosophy of Jiddu Krishnamurti...</p> <p>2. The Student has understood the Philosophical insights and of jiddu Krishnamurti</p>
21.	403-B	Analytical Philosophy	2017	<p>1. The Student has known the contents of Anaytical Philosophy.</p> <p>2. The Student has understood the Philosophy of Philosophers of Analytical Philosophy..</p>
22.	403-C	Sri Vaishnavism	2017	<p>1.The Student has analyzed the aspects of SriVaishnavism..</p> <p>2. The Student has applied the Philosophical Principles of .SriVaishvaism</p>
23.	403-D	Research Methodology and Computer Applications	2017	<p>1. The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer operating and applying principles</p>
24.	404	Philosophy of Peace	2017	
25.	405-A	Philosophy of Yoga	2017	<p>1. The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer</p>

				operating and applying principles
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20. Physical Education

S.No	Name of the Course	Course Code	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	B.P.Ed	Bachelor of Physical Education	2014-15	100%	 B.P.Ed students employibility .pdf
2	Ph.D	Ph.D	2008	100%	

21. Political Science & Public Administration

22. Population Studies

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1.	PS- 101	Population Characteristics and Theories	2017	<ul style="list-style-type: none"> i. Identify basic demographic concepts and definitions in Population studies ii. Impart knowledge on Population trends in size and growth of population at regional, national and global level. iii. Discover the implications of different theories on past and present population components with special reference to Malthusian theory
2.	PS - 102	Fertility	2017	<ul style="list-style-type: none"> i. Examine the basic concepts and measurements of fertility ii. Assess, compare and contrast trends in fertility and its determinants iii. Familiarize the concepts of nuptiality and factors affecting nuptiality
3.	PS – 103	Mortality	2017	<ul style="list-style-type: none"> i. identify the various concepts and measures of mortality ii. Examine the global levels and trends in mortality and its determinants iii. Acquire knowledge on techniques of life tables, constructions of multiple-decrement life table and computational aspects for demographical analysis
4.	PS 104	Sources, Evaluation and	2017	<ul style="list-style-type: none"> i. Examine and compare merits and demerits of

		Adjustment of Data		<ul style="list-style-type: none"> various sources of population data ii. Understand the evaluation of data, factors affecting completeness of data iii. Reproduce knowledge on population projections, calculations and applications
5.	PS – 105	Population Education and Extension	2017	<ul style="list-style-type: none"> i. Examine the components of population education and create awareness on population education among the students and youth ii. Acquire skills to organize Extension Programmes in population education at school, college and Non formal educational levels iii. demonstrate training on population education methods and techniques in order to create awareness on population education
6.	PS - 106	Human Values and Professional Ethics-I	2017	<ul style="list-style-type: none"> i. Identify the concepts of ethics and its relation to religion, politics and environment ii. Memorize the different aspect of values and interpret the best skills in understanding the merits of value related aspects iii. Demonstrate to interpret crime and theories of punishment with special reference to acquire knowledge on Manu and Yajnavalkya

7.	PS – 201	Migration and Multi Regional Demography	2017	<ul style="list-style-type: none"> i. Explore the different types and trends in migration ii. Apply skills in measurement, causes and consequences of different migrations in different regions iii. Explore the theories and recommend suitable policies of migration
8.	PS – 202	N.G.O Management & Field Work Orientation	2017	<ul style="list-style-type: none"> i. Understand the role, importance and establishing of NGO ii. Explore the sources of funding of NGO's at national and international level iii. Explore demographic data by working with individuals, groups and communities
9.	PS - 203	Statistical Methods	2017	<ul style="list-style-type: none"> i. Familiarize the basic statistical methods and its applications to demographic data ii. Demonstrate knowledge on methods and techniques of sampling iii. Acquire skills in processing of data with computer
10.	PS - 204	Population Sociology	2017	<ul style="list-style-type: none"> i. Examine the basic sociological concepts, and evaluate the relationship of sociology to other social sciences

				<ul style="list-style-type: none"> ii. Identify the social institutions, social change and socialization iii. Explore the sociological theories of fertility and its application in contemporary society
11.	PS - 205	Fundamentals of Social Work	2017	<ul style="list-style-type: none"> i. Memorize the basic concepts of social work and its nature and scope. ii. Recognize the different methods of social work iii. Explore the social work practice in different fields iv. Acquire knowledge on the evolution of social work in India v. Explore the professional associations and importance of networking in social work profession
12.	PS – 206	Human Values and Professional Ethics - II	2017	<ul style="list-style-type: none"> i. Acquire and gain knowledge on different concepts of human values and behavioural changes. ii. Recognizing the medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics of medical and health care professionals. iii. Acquire skills on environmental ethics and its relation to Health
13.	PS - 301	Population Geography	2017	<ul style="list-style-type: none"> i. Enumerate the geographical factors affecting the

				<p>distribution of population</p> <p>ii. Awareness and understanding of trends in urbanization and its impact on ecological imbalance, global warming, greenhouse effects.</p> <p>iii. Able to assess changing pattern of land use, conservation of resources and critical thinking of policies, programmes for better management of environment</p>
14.	PS - 302	Research Methodology	2017	<p>i. Demonstrate in conducting population research and surveys</p> <p>ii. Prepare research design and apply sampling techniques</p> <p>iii. Discover skills in methods and tools of data collection, data analysis, interpretation, and report writing.</p>
15.	PS - 303	Community Health	2017	<p>i. Discover comprehensive knowledge on concepts of community health, illness, disease prevention</p> <p>ii. Critical thinking on epidemiology, communicable diseases and its prevention</p> <p>iii. Understand and appreciate the concepts of health, nutrition, balance diet, nutrition deficiency diseases and National Health Programmes</p>

16.	PS – 304 a	Population Psychology	2017	<ul style="list-style-type: none"> i. Appreciate the scope of psychology and the relationship between value of children and fertility ii. Familiarize and comprehend the significant psychological theories relevant to fertility and contraceptive behavior iii. Demonstrate leadership and effective communication skills in promoting health and family planning
17.	PS – 304 b	Population Policies and Programmes	2017	<ul style="list-style-type: none"> i. Explore population policies related to fertility, mortality and migration ii. Acquire the knowledge on methods of family planning and acts relating to medical termination of pregnancy, age at marriage and also registration of vital events iii. Apply best practices and strategies for promoting family welfare programme.
18.	PS – 304 c	Gerontology	2017	<ul style="list-style-type: none"> i. Understand the scope of gerontology and demographic dimensions of the elderly ii. Critically explore and analyze changes in status of elderly health, problems and needs of elderly iii. Acquire skills in dealing elderly issues like

				neglect, abuse, violence and abandonment caregivers stress and elderly neglect
19.	PS – 304 d	Population and Sustainable Development	2017	<ul style="list-style-type: none"> i. Examine the concepts and theoretical issues relating to sustainable development and sustainable goals ii. Assess and measure the quality of life, resource creation, and management and distribution iii. Critically think of the relationship between population, environment, poverty and population sustainable growth
20.	PS-305 a	Principles of Population Studies	2017	<ul style="list-style-type: none"> i. Explore the components of population change, trends in size and growth of population ii. Discover the concepts of fertility, mortality and migration iii. Acquire skills in exploring the sources and quality of data on fertility, mortality and migration
21.	PS – 305 b	Population, Society and Environment	2017	<ul style="list-style-type: none"> i. Understand the components of population change and sociological consequences ii. Demonstrate sociological perspective to analyze the relationship between man, ecology and environment iii. Critical thinking of Sustainable development and

				its concepts
22.	PS - 401	Communication for Family Welfare Programmes	2017	<ul style="list-style-type: none"> i. Examine the elements in communication process ii. Understand and apply different approaches to communication iii. Critically analyze and apply factors influencing a various communication methods to promote family planning
23.	PS – 402	Reproduce Health and Adolescent Issues	2017	<ul style="list-style-type: none"> i. Examine the anatomy and physiology of human reproduction, conception and pregnancy ii. Describe the male and female reproductive health problems iii. Assess and examine various adolescent issues
24.	PS - 403	Population Growth and Development	2017	<ul style="list-style-type: none"> i. Understand the indicators of development with special reference to population growth and development. ii. Discover the concepts of economic inequality and its causes iii. Examine the status of women and development and demographic consequence of women empowerment
25.	PS – 404 a	Dissertation	2017	<ul style="list-style-type: none"> i. Develop in-depth knowledge of field work and community surveys

				<ul style="list-style-type: none"> ii. Acquire the skills to present and discuss the findings through seminars iii. Explore the skills in preparation and presentation of research findings
26.	PS – 404 b	Demography of Andhra Pradesh	2017	<ul style="list-style-type: none"> i. Acquire knowledge on basic trends and changes in population growth in Andhra Pradesh ii. Examine the migration and urbanization, problems of slums and related policies with special reference to Andhra Pradesh iii. Explore the population policies and programmes in Andhra Pradesh
27.	PS – 404 c	Social Work in Industry and Human resource Management	2017	<ul style="list-style-type: none"> i. Understand the concepts, principles and functions of Management ii. Acquire skills on difference process of Human Resource management iii. Demonstrate the organizational behavior, management conflicts and organization of interventions iv. Concepts of Industrial relations and related legislations for industrial workers
28.	PS – 404 d	Health Economics	2017	<ul style="list-style-type: none"> i. Explore the concepts in economics in relation to

				<p>health and population dynamics</p> <p>ii. Acquire skills in assessing costing and health economics</p> <p>iii. Critically analyze and evaluate general health status and quality of life and also measurement of health outcomes</p>
29.	PS – 405 a	Rural, Urban, Tribal Development	2017	<p>i. Explore the characteristics of rural, urban and tribal community</p> <p>ii. Discover community development and experiment projects in rural, urban and tribal areas</p> <p>iii. Critically examine and understand the issues related to rural, urban and tribal areas and approaches to community development</p>
30.	PS – 405 b	Social policies and planning	2017	<p>i. Discover social policies in relation to Indian constitution.</p> <p>ii. Examine the approaches to social policy</p> <p>iii. Demonstrate and analyze various social policies and their implementation</p>

Masters in Social Work

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	MSW- 101	Sociology for Social Work	2017	<ul style="list-style-type: none"> i. Discover basic concepts in Sociology and examine the relation between individual and society. ii. Distinguish between Socialization, Social institutions and Social groups iii. Critically demonstrate , Social Stratification, Social Deviance, Social Change and Social Problems
2.	MSW - 102	Human Growth and Personality Development	2017	<ul style="list-style-type: none"> i. Memorize various stages of Human Growth and Development ii. Identify different concepts of Human Behavior like Motivation, Perception, Learning and Attitudes iii. Discover experience in assisting the person in Solving their Psycho social problems through personality development and adjustment
3.	MSW – 103	Social Work Profession & Field Work Orientation	2017	<ul style="list-style-type: none"> i. Recall various concepts like Social Service, Social Welfare, Social Development and Social Work ii. Experiment on Ethical Values of Professional Social Work and analyze current trends in Social Work

				<ul style="list-style-type: none"> iii. Design field work in Social Work and acquire skills to involve the client in problem solving process
4.	MSW 104	Social Work Practice with Individuals & Groups	2017	<ul style="list-style-type: none"> i. Recognize the basics Concepts , Techniques and Skills of case work ii. Apply different approaches of Case Work, Group Work iii. Evaluate the application of Social Case Work and Group Work at various settings like Schools, Hospitals, and Correctional Settings and in Communities.
5.	MSW – 105	Social Work Practicum - I	2017	<ul style="list-style-type: none"> i. Recognize the significance of Social Work in various settings ii. Illustrate the application of Social Work Methods in the agencies during their field practicum iii. Examine the applications of Social Work Principles and Skills in the functions of different organizational systems
6.	MSW - 106	Human Values and Professional Ethics-I	2017	<ul style="list-style-type: none"> i. Familiarize the concepts of ethics and its relation to Religion, Politics and Environment etc. ii. Able to gain knowledge on different aspect of Values and Interpret the best Skills in

				<p>understanding the merits of value related aspects</p> <p>iii. Discover to interpret Crime and Theories of Punishment with special reference to Manu and Yajnavalkya</p>
7.	MSW – 201	Social Work Profession & Field work Orientation	2017	<p>i. Recognize the Scope, Importance and Significance of Social Work Practice in different fields</p> <p>ii. Acquire Knowledge and Skills Essentials for Working with Groups and Communities</p> <p>iii. Formulate Capacity Building by organizing training and awareness programmes in the Field Work Settings</p>
8.	MSW – 202	Social Work Practice with Communities	2017	<p>i. Acquainted with advanced level of knowledge in Community organization and Social Work practice</p> <p>ii. Appraise various approaches in Community Organization and Current issues in Community Organisation</p> <p>iii. Organize community participation using PRA methods and techniques</p>
9.	MSW - 203	Social Action and Social Legislation for Social Work Practice	2017	<p>i. Distinguish the elements of Social action, Models and Process of Social Action</p> <p>ii. Connect the Social Legislations with Social Work</p>

				Practice iii. Appraise Laws pertaining to Women, children and Aged in Social work practice
10.	MSW - 204	Social Policy and Planning	2017	i. Examine the nature and Approaches of Social Policy in the Socio-economic and political context ii. Assess the implementation of Social Welfare Policies in Education, Health, Women, Children and Environment iii. Examine the Role of Social Workers in Formulating , Planning and Implementation of Social Policies
11.	MSW - 205	Social Work Practicum-II	2017	i. Examine the Nature, Scope and Functions of the different Government and non-profit organizations agency at ground level ii. Trained to assist their supervisor with in the limitations of the agency iii. Equipped with Professional Skills and Techniques through practical exposure
12.	MSW – 206	Human Values and Professional Ethics - II	2017	i. Summarize different concepts of Human Values and Behavioural changes required for adjustment

				<p>in Family and Society</p> <p>ii. Demonstrates Medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics in Medical and Health care professionals.</p> <p>iii. Acquire Skills on Environmental ethics and the Environment and Health</p>
13.	MSW - 301	Social Work Intervention with Families	2017	<p>i. Discover the Family Centered Practice as a Model of Social Work practice and understand Family life management and Family Dynamics</p> <p>ii. Demonstrate Family Assessment and Application of Tools : Interviewing , Ecological assessment – Eco map , Generation assessment- Genogram, Triangle, Family Sculpture and Family Mapping</p> <p>iii. Integrate social work practice with Families and Social Work Therapeutic Interventions wherever appropriate</p>
14.	MSW - 302	Social Work in the Field of Health	2017	<p>i. Examine the concept of Health, factors affecting health and Indicators of Health.</p> <p>ii. Evaluate Primary and Community healthcare services with special references to communicable</p>

				and Non-communicable diseases iii. Assess the relevance, domains and nature of Social Work Intervention in different Health settings.
15.	MSW - 303	Counseling in Social Work Practice	2017	i. Understanding the basics of Counseling and Approaches of Counseling ii. Develop ability to apply appropriate Counseling Techniques with Special Group iii. Demonstrate to apply Counselling Skills while working with clients in various settings like Health ,Family and School Settings
16.	MSW – 304 a	Social work Research	2017	i. Acquainted with advanced level of knowledge in Social Work Research process and Statistics ii. Illustrate single subject and evaluation Research Designs along with various Research designs iii. Facilitate methods of Sampling, Data Collection, Analysis, Statistical-Applications and Report Writing
17.	MSW – 304 b	Gerontological Social Work	2017	i. Identify theScope of Social Work in the field of Gerontology. ii. Illustrate Changes in the status of Elderly, Health problems and needs of Elderly. iii. Experiment the social work interventional

				strategies to Elderly ,Care givers and Counseling
18.	MSW – 304 c	Social Work Practicum-III	2017	<ul style="list-style-type: none"> i. Analysis the role of Community and dramatize the Community Organisation in field work practice ii. Develop skills and expertise their Field Work exposure to organize community programmes iii. Examine the new Intervention programs in the area of their specialization to bring a solutions to the problems in different community
19.	MSW – 304 d	Human Rights and Social Legislation	2017	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Human rights ii. Distinguish various Social Legislations and Legislations related to Women and Children iii. Nurture the Social Work Professionals by creating awareness on various current issues and related Legislations
20.	MSW-305 a	Principles of Population Studies	2017	<ul style="list-style-type: none"> i. Demonstrate the concept of Population Studies, Components of Population Change Population Structure ii. Interpret basic concepts and measures of Fertility, Mortality ,Mobility and Migration iii. Critically evaluate the Concept of Multi Regional Demography, its uses and limitations

21.	MSW – 305 b	Fundamentals of Social Work	2017	<ul style="list-style-type: none"> i. Examine basic concepts, Principles and Methods of Social Work ii. Defend values and Principles of Professional Social Work and Code of ethics for Social Workers iii. Evaluate Social Work Education in India, Professional Associations, Problems of Professionalization and Networks in Social Work
22.	MSW - 401	Social Work Intervention with Children	2017	<ul style="list-style-type: none"> i. Examine the Significance and Development of Child Welfare Services with special reference to Child Rights ii. Appraise various Institutional and Non-Institutional services for children in need iii. Create Professional Knowledge on Social Work Intervention with children in difficult situations
23.	MSW – 402	Rural/Urban/Tribal Development & Empowerment –I	2017	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in rural Urban and Tribal community and Community Development Projects across the country ii. Trained to meet the challenges specifically related to Rural, Urban and Tribal communities iii. Will nurture the Social Work Professionals to become effective Social Worker and contribute to

				community by conducting awareness camps, strengthening Self-Help Groups and Facilitating Empowerment in the communities.
24.	MSW - 403	Social Work in the Field of Mental Health	2017	<ul style="list-style-type: none"> i. Understand the concept and importance of Mental Health and Psychiatric Social Work ii. Distinguish Psychiatric disorders and application of Therapeutic Interventions in Psychiatric Illness iii. Plan to provide Psychiatric Rehabilitation to assist Mentally Ill patients
25.	MSW – 404 a	Social Work in Industry & Human Resource Management	2017	<ul style="list-style-type: none"> i. Enrich knowledge on HRM, Personnel management, HR planning and ii. management systems iii. Appraise organizational behavior, conflict Resolution Strategies and Legislation related to industrial relations iv. Develop skills in Industrial Social Work Practice and the role and significance of Corporate Social Responsibility
26.	MSW – 404 b	Social Work Practicum-IV	2017	<ul style="list-style-type: none"> i. Acquires training in the organization as social worker and develop sound knowledge on social work which will motivate them to start an NGO ii. Evaluate projects and organize programmes for

				<p>fund raising</p> <p>iii. Hypothesize research in their area of specialization through which they can suggest recommendations to agencies for improving quality</p>
27.	MSW – 404 c	Social Work Practicum-V	2017	<p>Learn Skills and able to apply Principles during the Internship in Block Placement</p> <p>Explore research studies at Micro levels and submit reports as Mini Project Work</p> <p>Demonstrate as effective Social Worker in the agency in which they are placed</p>
28.	MSW – 404 d	Social Work and Disaster Management	2017	<p>i. Summarize and understand the disasters and Disaster Management</p> <p>ii. Acquire a critical perspective of the policy framework, Institutional Structures and programmes for Disaster Management in India</p> <p>iii. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management</p>
29.	MSW – 404 a	NGO Management	2017	<p>i. Distinguish the Concept, Structure, Registration and By laws of NGOs</p> <p>ii. Demonstrate Organisational Management and source of funding of NGOs</p> <p>iii. Familiarize to organize Human Resource</p>

				Management in NGOs
30.	MSW – 404 B	Health Education	2017	<p>Discover the Roles, Responsibilities, Approaches and ethics in Health Education</p> <p>Describe the Behavioral, Environmental, and Genetic risk factors for Communicable and Non- communicable diseases.</p> <p>Evaluate channels of Health education and organizational health set up at Central, State and District levels</p>

23. Sanskrit

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	SNSKT 101	Elements of Darsanas-I	2017	<p>An understanding of the evolution of Darsanas</p> <p>I.To create an awareness of the Darsanas</p> <p>ii.Acquire Knowledge of the Baudda and Jaina Darsanas</p>

				iii.To get the Knowledge of Meemamsa Sastra
2	SNSKT-102	Vedic Texts-I	2017	I.Students able to get the Vedic knowledge II.Students know the importance of Vedic gods III.Students are understanding the Vedic chandas IV.To make understanding the spiritual knowledge through Kathopanishat
3	SNSKT-103	PROSE AND POETRY-1	2017	I.An understanding of evolution of Sanskrit poetry across the ages until the modern age II.Get the knowledge of gadya kavya III.Understand the poetical skills IV.Understand the importance of kiratarjuneeya in Sanskrit literature
4	SNSKT-104	DRAMA, ALANKARA AND PROSODY -1	2017	Student will be able to get I.Understanding the features of Sanskrit drama II.Knowledge of organ and development of Sanskrit dramas III.Understanding the efficiency of kalida's poetic skill. IV.Get the knowledge of chandas V.Get the knowledge of different types of chandas
5	SANSKT105 (A)	HISTORY OF SANSKRIT LITERATURE – 1	2017	After completed of course the students are able to I.Know the origin and development of Sanskrit literature

				<p>II.Know the importance of Vedas and its date.</p> <p>III.Know the meaning and contest of Brahmanas, Aranyakas and Upanishads</p> <p>IV.Know the social conditions as reflected in the Brahmanas</p> <p>V.Know the importance of Ramayana and its date</p>
6.	SANSKT :10 5(B)	DRAMA AND POETRY -1	2017	<p>I.Students will be able to gain understanding the features of Drama, Sentiment Moralities</p> <p>II.Through understanding the importance and place of Rasa in the Drama</p> <p>III.The knowledge about the skillfulness of Bhavabhutis Dramatergy</p> <p>IV.Recognize the transpiration of human experiences into dramatic experiences</p> <p>V.The knowledge about importance of Sandesa Kavyas in Sanskrit Literature</p>
7.	SANKT :105 (C)	ALANKARA AND PROSODY - 1	2017	<p>I.Students will understand the different types of Alankara</p> <p>II.Know the importance of Alankara in the poetry</p> <p>III.Understand the development of on the basis of similar</p> <p>IV.Recognize the Guru and Laghu in prosody</p> <p>V.Know the importance of melody through prosody</p>
8.	SANSKT:10 6(A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KOUMUDI- 1	2017	<p>After complication of the course students are able to-</p> <p>I.Find out the main causes of semantic change</p> <p>II.Know the classification of suffixes the theories on the origin of suffixes</p> <p>III.Learn the morphological classification of verbs</p>

				IV.Know the structure of vibhaktis and roots system and develops their writing skills without grammatical mistakes..
9.	SANSKT:10 6 (B)	KAVYALANKARA SUTRA VRITTI -I	2017	I.Know the definition of poetry and prose II.Know the different types of Kavya III.Understand the different types of Riti IV.Understand the Pada and Padartha Doshas.
10.	SANSKT:10 7	HUMAN VALUES AND PROFESSIONAL ETHICS -I	2017	After completion of the course students are able to I.Understand Bhagavad Gita as a guide for modern life style II.Know the principles of Buddhism and Jainism III.Realize the necessary of practicing Human values and ethics in walks of life IV.Acquire the knowledge of Good and Bad V.Know the about crime and punishment according manu and Yajnavalkya
11	SANSKT – 201	ELEMENTS OF DARSANAS –II	2017	After completion of the course students are able to – I.Understand the knowledge of upamana and sabda pramanas II.Get the knowledge of Ayatharthanu Bhava III.Understand the Bahavana IV.Understand the Principals of Sankhya
12	SANSKT – 202	VEDIC TEXTS –II	2017	Students will know- I.The importance of Suktas

				<p>II.The definition and purpose of Nirukta</p> <p>III.The meaning of Vedic words</p>
13	SANSKT – 203	PROSE AND POETRY - II	2017	<p>Students will able to get</p> <p>I.The beautification of prose literature.</p> <p>II.Enhancement of knowledge in appreciation of classical poetry</p> <p>III.Understanding about text that are selected.</p> <p>IV.Teaching skills in prose and poetry.</p>
14	SANSKT – 204	DRAMA ALANKARA AND PROSODY – II	2017	<p>Students will know</p> <p>I.The different characteristic features in Dramas</p> <p>II.The importance of nature and hermitages</p> <p>III.The features of Alankara and Classification of Alankaras</p> <p>IV.The knowledge of prosody</p>
15	SANSKT – 205 (A)	HISTORY OF SANSKRIT LITERATURE –II	2017	<p>After the completion of the course students are able to</p> <p>I.Know the features of Mahakavyas</p> <p>II.Know the structure of Drama and social message</p> <p>III.Know the moral values through the tales</p> <p>IV.Get the glance of classical Sanskrit literature</p>
16	SANSKT – 205 (B)	DRAMA AND POETRY - II	2017	<p>I.Get knowledge of good</p> <p>II.Know the character of Hero and Hero in etc., in the Drama</p>

				<p>III. Know the changes stories between original and creativeness</p> <p>IV. Know the importance skill fullness in poetry of Kalaidasa</p>
17	SANSKT – 205 (C)	ALANKARA AND PROSODY - II	2017	<p>I. Know the features and Examples</p> <p>II. Understand the different types of Uktis in Alankaras</p> <p>III. Know the difference between stuti and Ninda Alankaras</p> <p>IV. Get knowledge of sikharini and Mandakranta vrittas</p> <p>V. Know the definition and importance of Gayatri Matras</p>
18	SANSKT - 206 (A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KAUMUDI – II	2017	<p>After complication of the course students are able to –</p> <p>I. Find out the main causes of semantic change</p> <p>II. Know the classification of suffixes the theories on the origin of suffixes</p> <p>III. Learn the morphological classification of verbs</p> <p>IV. Know the structure of vibhaktis and roots system and develops their writing</p> <p>Skills without grammatical mistakes</p>
SANSKID-206 (B)		KAVYALANKARA SUTRA VRITTI - II	2017	<p>I. Know the difference between Guna and Alankara</p> <p>II. Ability to understand the theory of Riti</p> <p>III. To enable to understand the usage of Sabdalankaras</p> <p>IV. Know the contribution of Vamana to alankara sastra</p>
20	SANSKT - 207	HUMAN VALUES AND PROFESSIONAL	2017	<p>I. Understand the relevance of value based education in modern society</p> <p>II. Understand the old traditions of medical ethics</p>

		ETHICS - II		<p>III. Understand the solutions of illegal and unethical practice</p> <p>IV. Understand the man and nature, Natural calamities and get the solution regarding those situations.</p>
21	SANSKRT :30 1	(Sahitya) RASAGANGADHARA, (ANANA.I) – I (IE)	2017	<p>After the completion of the course students are able to</p> <p>I. Understand the Rasaswarupa</p> <p>II. Understand the purpose of Kavya and different types of Kavya</p> <p>III. Know the interpretations of Rasa sutras and ten types of Gunas</p> <p>IV. Know the Abhasas</p>
22	SANSKRT :30 2	DHVANYALOKA - 1	2017	<p>on completion of the course students are able to</p> <p>I. Understand the Dhvani swarupam</p> <p>II. Understand the opinion of Dhvanyabhavavadins</p> <p>III. Know the Dhavanikavya Lakshana</p> <p>IV. Know the Vyangya as Kavyatma</p> <p>V. Get the knowledge of splendid sastra Dhvanyaloka</p>
23	SANSKRT :30 3-A	KAVYAPRAKASA AND DASARUPAKA- 1(IE)	2017	<p>Students will get -</p> <p>I. The knowledge of definition of kavya, types of kavyas</p> <p>II. The Knowledge about verities of vyangya</p> <p>III. The Knowledge of vyanjanaswarupa</p> <p>IV. An idea of ten types of Rupakas</p>
24	SANSKRT:30 3-B	HISTORY OF SANSKRIT POETICS	2017	<p>On completion of the course students are able to</p> <p>I. Get the knowledge of sentence</p>

		AND SANSKRIT ESSAY-I		formation to write the essays on different issues II. Acquire the knowledge of Alankarikas III. Understand the different theories in Alankara sastra. IV. Understand the theory of Alankara and Rithi.
25	SANSKT:30 3-C	Natyasastram Chapter I & VI only	2017	
26	SANSKT:30 3-D	Bhojaraja's Champu Ramayana (Balakanda only)	2017	
27	SANSKT:30 4	Personality Development in Pancatantra (Mitrabheda and Mitrapraptikam only)	2017	.I. Know the losses arriving out of Non friendship II. Know the world knowledge III. Achieving personality development through Panchatantra
28	SANSKT:30 5-A	Introduction of Sanskrit language Infant Reader complete	2017	
29	SANSKT:30 5-B	Raghuvamsam (Ist canto only)	2017	on completion of the course students are able to I. Understand the greatness of Sanskrit Language II. Know the greatness of poetry

				<p>III. Get knowledge on panchamahakavya's after the epic literature</p> <p>IV. Get the knowledge about the kalidasas Natural and beautiful creations</p> <p>V. Understand the uses of upamalankara by kalidasa</p>
30	SANSKT:40 1	(SAHITYA) RASAGANGADHARA (ANANA-I)	2017	<p>After completion of the course students are able to</p> <p>I. Know the number of Rasas in kavyas</p> <p>II. Know the uses of Rasa to elevate the situations in kavya</p> <p>III. Acquire the knowledge of Gunas and their role in Kavyas</p> <p>IV. Understand the differentiation of Bhava in Alankara sastra.</p>
31	SANSKT :40 2	DHVANYALOKA –II	2017	<p>Students will be able to get-</p> <p>I. The knowledge about different forms of schools</p> <p>II. Knowledge about the classification of Dhvani Siddhanta</p> <p>III. Knowledge regarding different alankara dhvanis</p> <p>IV. Know the difference between Rasadhvani and Rasavadalankara</p> <p>V. Know the main Rasa in Ramayana and Mahabharatha</p>
32	SANSKT:40 3(A)	KAVYAPRAKASA AND DASARUPAKA– II	2017	<p>After the completion of the course students are able to –</p> <p>I. Understand the structure of the Kavya</p> <p>II. Get the knowledge of Rasa and its Bhedas</p>

				<p>III.Find out the classification of Dhvani</p> <p>IV.Understand the Lakshana of Nataka</p> <p>V.Get the knowledge about 10 types of Nataka Bhedas</p>
33	SANSKT:40 3(B)	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-II	2017	<p>After the completion of the course students are able to –</p> <p>I.Get the knowledge of writing skills</p> <p>II.Acquire the knowledge of several Aesthetic poets like Mammata, Ruyyaka</p> <p>III.Understand the main theories on kavya of different poets</p> <p>IV.Get the knowledge of presentation skills on social related issues</p>
34	SANSKT :40 3(C)	Kavyadarsa Chapter – I	2017	
35.	SANSKT :40 3(D)	KavyaMeemamsa first to Eight Adhyayas	2017	
36.	SANSKT :40 4	Introduction to Epigraphy and Manuscriptology	2017	<p>After the completion of the course students are able to</p> <p>I.Get the knowledge of inscriptions</p> <p>II.Acquire the knowledge of Brahmi and kharoshthi scripts</p> <p>III.Get the knowledge of writing materials in Ancient India</p> <p>IV.Get the knowledge of edition and critical edition of Manuscripts</p>
37.	SANSKT :40 5 (A)	Hithopadesa of Narayanapandita	2017	<p>Students will be able to</p> <p>I.Get the moral values</p>

		Mitralabha and Mitrabheda		II.Understand the mentality of different kinds of people in the society III.Acquire the knowledge to behave a good citizen and a well human being IV.Understand the message through neetikavya
38.	SANSKT :40 5(B)	Kautilya'sArthasastra Chapter – I (Vinayadhikarikam)	2017	

24. Sociology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MASO-101	Classical Sociological Theories	2017	1. This paper seeks to expose the students to the

				<p>classical thinkers and their contribution in building theoretical sociology.</p> <p>2. To Compare and contrast the basic theoretical perspectives of sociology</p> <p>3. To acquaint students with recent trends in Sociological thought.</p>
2	MASO -102	Sociological Research Methods and Statistics	2017	<p>1. This course aims to enable the students to understand the fundamental nature of the scientific approach towards social research and apply the skills in undertaking social research.</p> <p>2. To equip the students with strategies of development for different segments of society.</p> <p>3. To provide ways and means of understanding and studying social reality</p>
3	MASO -103	Indian Society and Inclusive Growth	2017	<p>1. This paper presents a comprehensive and integrated profile</p> <p>2. To gain a better understanding of past and present structure and continuity of society</p> <p>3. Identify and analyze the problems in Indian society and suggest solutions from</p>

				sociological perspective
4	MASO -104	Participatory Research	2017	<ol style="list-style-type: none"> 1. This paper is to inspire students to undertake research in partnership with stakeholders 2. To explain the emancipatory and empowering, collaborative and reflective approaches 3. To discuss the relationship between PRA and scientific method to incorporate the results to change the practice and policy.
5	MASO -105	Principles of Sociology	2017	<ol style="list-style-type: none"> 1. This paper gives the students an understanding of the basic principles of Sociology as an academic discipline 2. To analyze the ways in which people interact and function in groups 3. It provides a basic knowledge on the fundamental aspects of the important social institutions
6.	MASO -106	Human values and Professional Ethics - 1	2017	<ol style="list-style-type: none"> 1. To help students distinguish between values, skills, and understand the need, basic guidelines, content and process of value

				<p>education</p> <ol style="list-style-type: none"> 2. To provide Human Values and Ethics relating to Religion, Business, Law, Media and Environment 3. To provide an in depth knowledge about the Moral and ethical values for interpretation in their day to day life
7.	MASO -201	Applied Sociology	2017	<ol style="list-style-type: none"> 1. To help students develop clear understanding of key concepts in classical and contemporary sociology and how these concepts relate to some of the perennial themes in the discipline 2. To develop an appreciation of the link between sociological theory and practice 3. To help students master the art of explaining abstract material in clear, precise ways that can be easily understood even by a lay man
8.	MASO -202	Social Demography	2017	<ol style="list-style-type: none"> 1. To introduce the significance of population and its relation to society 2. To provide a theoretical knowledge of the basic concepts of population and changes 3. To enable the students to realize impact of population , changing global scenario,

				awareness on population control devices and analyse prospects
9.	MASO -203	Rural Sociology and Development	2017	<ol style="list-style-type: none"> 1. This course is to help the students to understand the difference between urban and rural development 2. To analyse the dynamics of rural Indian society in the context of its socio, political and economic contradictions 3. To evaluate the problems related to development in relation to the needs and aspirations of the marginalized sections
10.	MASO -204	Extension Work	2017	<ol style="list-style-type: none"> 1. This paper expose the students to apply sociological theories and principles in field areas 2. To give direct experience of social institutions and social problems through field work 3. To train for creative and innovative experiences in social field using research techniques
11	MASO -205	Environmental Sociology	2017	<ol style="list-style-type: none"> 1. This paper aims to provide the students with a comprehensive conceptual, theoretical and empirical backgrounds of interaction between

				<p>Social world and Nature</p> <ol style="list-style-type: none"> 2. To explore the relationship between human society and the larger natural environment 3. To prepare the students for further research in broad areas of environment and natural resource governance from sociological perspective
12	MASO -206	Human Values and Professional Ethics-II	2017	<ol style="list-style-type: none"> 1. To provide knowledge about Value oriented education, Medical ethics, Family values , Ethics and Moral code 2. To provide the Business, Environmental and social ethics followed and practiced 3. To enhance values of self-esteem and self-respect among students
13	MASO -301	Medical Sociology	2017	<ol style="list-style-type: none"> 1. This course will help the students to understand the concepts of health and illness 2. To understand the social facts of health and the root causes of illness 3. To apply sociological theories, concepts, and research to experiences of health, illness, health education, public health and the intense public issues related to health

14	MASO -302	Urban Sociology and Development	2017	<ol style="list-style-type: none"> 1. This paper attempts to analyse the urban social world and its dynamics, various theoretical constructs concerning the patterning and growth of towns and cities 2. To understand the various theoretical approaches to urban development and apply them to different aspects of cities 3. To study historical, economic, and political trends that have affected the growth and development of cities
15	MASO -303	Field Work and Extension (Village placement)	2017	<ol style="list-style-type: none"> 1. This paper aims at direct exposure of students to the real world and problems confronting society 2. Students will carry out field work in village for 10 days for practical experience 3. To learn about sociological study techniques like Participatory Rural Appraisal, Sampling, Interview and Extension
16	MASO 304	Generic electives (a) Human Rights	2017	<ol style="list-style-type: none"> 1. To study Human rights and Constitutional framework 2. To recognize the role of human rights in development, theories of development,

				<p>development and tradeoff on human rights</p> <p>3. To Understand the social, political, cultural, and comparative construction of human rights history , institutions, discourses, and futures</p>
		(b) Sociology of Gender	2017	<p>1. To examine how society influences understandings and perception of differences between masculinity (what society deems appropriate behaviour for a “man”) and femininity (what society deems appropriate behaviour for a “woman”).</p> <p>2. To understand influences of gender on identity and social practices.</p> <p>3. To pay special focus on the power relationships that follow from the established genderorder in a given society and changes over time.</p>
		c) Gerontology	2017	<p>1. This paper aims at understanding physical, psychosocial, and cultural aspects of the aged</p> <p>2. To understand aging transitions and intergenerational issues at various contexts and its nexus</p> <p>3. To examine health and illness adjusting to loss</p>

				and care of persons with chronic illnesses and rehabilitative needs
		(d) Sociology of Andhra Pradesh	2017	<ol style="list-style-type: none"> 1. This paper aims to study the historical outline and emergence of Andhra society 2. To understand the culture and various social movements in Andhra Pradesh 3. To analyze the welfare and developmental programmes of the rural and urban Andhra Pradesh
17	MASO -305	Open elective (a) Social Psychology and Personality Development	2017	<ol style="list-style-type: none"> 1. This paper aims at the understanding the relationship of cognition and attitudes of individual and society 2. To focus on psychological aspects of the individual in the context of social behaviour 3. To examine group dynamics such as group thinking and decision making, leadership, persuasion, conflict and cooperation)
		(b) Business And Society	2017	<ol style="list-style-type: none"> 1. This paper aims at understanding the concepts of Social economy and knowledge management 2. To examine the business community and social responsibility

				3. To understand the inter-relation among business firms, organizations , public policy, business law and governance
23	MASO -401	Criminology	2017	<ol style="list-style-type: none"> 1. This paper seeks to describe the students about the different types of crime and scope of criminology 2. To illustrate the causes of crime and crime rates 3. To study the crime scientifically through data on crime, trends and various theoretical approaches
24	MASO-402	Industrial Dynamics	2017	<ol style="list-style-type: none"> 1. This paper aims to provide the students about the structure and process of industrial organizations from sociological perspective 2. To deal with the effects of industrialization on Indian social systems and institutions 3. To study the internal relations which are connected directly or indirectly with industry
25	MASO-403	Field Work	2017	<ol style="list-style-type: none"> 1. This paper aims at exposing students in analysing the data 2. To understand the different variations in viva-

				voce 3. To understand the recent patterns in Practice
26	MASO-404	Generic electives (a) Social Welfare and Welfare Administration	2017	1. This paper aims at understanding the efficiency of resources and services to meet the needs of the individuals, families, groups and communities 2. To understand the problems of Schedule castes, Schedule tribes, Backward classes and Minorities 3. To facilitate social relationship and adjustments necessary for the disadvantaged sections, children, women, youth and elderly
		(b) Social Entrepreneurship Development	2017	1. The aim of this paper is to understand the theoretical positions of the Social entrepreneurship development 2. To be aware of the contemporary approaches to social entrepreneurship 3. To have comprehensive understanding of the context, process and effects of entrepreneurial activities
		(c) Sociological Perspectives	2017	1. This paper aims at the students to compare and contrast basic theoretical perspectives of

				<p>sociology through rigorous scientific enterprise</p> <ol style="list-style-type: none"> 2. To sensitize the need for empirically grounded theories 3. To acquaint students with the recent trends in Sociological thought
		(d) Globalization and society	2017	<ol style="list-style-type: none"> 1. This paper aims at the students to understand the nature and dynamics of globalization and social context through various agencies 2. To analyze the interconnected changes in the economic, cultural, social, and political spheres of society 3. To understand ever-increasing integration of nations, regions, communities
27	MASO-405	Open elective (a) Globalization and Educational Pursuits	2017	<ol style="list-style-type: none"> 1. This paper aims to understand multifaceted nature of globalization and internationalization in the context of higher education 2. To examine key concepts and theories of globalization, international and comparative education 3. To make the students understand the Global

				citizenship from professional and academic perspective
		(b) Visual Sociology	2017	<ol style="list-style-type: none"> 1. This paper aims at providing the students a new perspective in study of deliberate versus spontaneous behavior 2. To be aware of recording social signals, expressions as spontaneous as possible 3. To organize the recording of reactions and variations that occur as a response to the context

25. Tamil

26. Telugu Studies

27. Urdu

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
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1.	URD 101	Mubadiyat-e- Lisaniyat aur Tareeq-e -Zaban-e- Urdu	2017	Course Outcomes: (1) Knowledge of history of basic Urdu Language. (2) Knowledge of history of basic Urdu Language.	
2.	URD 102	Dakniyat	2017	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyses the writings of Mohd Quli	
3.	URD 103	Classiki Nasr	2017	Course Outcomes: (1) Student will be able to understand the early Urdu poetry of Northern India.	
4.	URD 104	Arabi Zaban-o-Adab	2017	Course Outcomes: (1) Knowledge about the tradition of humor and satire in Urdu literature. (2) Knowledge about the tradition of humor and satire in Urdu	

5.	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2017	<p>Course Outcomes:</p> <p>(1) Able to read, write and understand simple Arabic sentences.</p> <p>(2) Translate simple Arabic sentences.</p> <p>(3) Student will gain brief awareness of Arabic literature</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Qaseeda from Dakani period.</p> <p>(2) Differentiate between the Dakani and Urdu Qaseeda with respect of language, diction and style</p> <p>(2) Understand the salient features of Urdu Qaseeda with special</p>	
6.	URD 106	Human Values and Professional Ethics – I	2017	<p>Course Outcomes:</p> <p>(1) Knowledge about tradition of Urdu Drama.</p> <p>(2) Distinguish various forms and techniques of Urdu Drama.</p> <p>(3) Analyses critically the text of Anar kali and Inder Sabha.</p> <p>Course Outcomes:</p> <p>(1) The student would enrich the knowledge about the Urdu</p>	
7.	URD 107		2017	<p>Course Outcomes:</p> <p>(1) Understand, What are the Human Values accepted globally.</p> <p>(2) Knowing the importance of Human Values in religious</p>	
8.	URD 201	Rayalaseema ka Sher-o- Adab	2017	<p>Course Outcomes:</p> <p>(1) Have learn about the important historical events of Urdu Poetry</p>	

9.	URD 202	Classiki Shairi	2017	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyze the writings of Mohd Quli Qutub Shah.
10.	URD 203	Hali : Hayat aur Adabi Khidmat	2017	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text.
11.	URD 204	Farsi Zaban-o-Adab	2017	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text.
12.	URD 205	Ghair Afsanavi Adab	2017	Course Outcomes: (1) Student will be able to read, write and understand simple persian sentences. (2) Acquire Knowledge about the Persian poetic writings of Sa'di, Hafiz and Iqbal. (3) Student will gain brief awareness of Persian literature. Course Outcomes: (1) Specialized in the life and contributions of Faiz Ahmed Faiz. (2) Identify the uniqueness of the poetry of Faiz Ahmed Faiz. (3) Understanding the salient features of the poetry of Faiz

13.	URD 206 206	Human Values and Professional Ethics –II	2017	Course Outcomes: (1) Awareness of literature written in Rayalaseema. (2) Understand the style of new poets of this region. (3) Gain knowledge about two of the prominent prose writers of this area	
14.	URD 207		2017	Course Outcomes: (1) Awareness about Professional Ethics and its categorization. (2) Understand the importance of Professional Ethics in society.	
15.	URD 301	Jadeed Nasr	2017	Course Outcomes: (1) Knowledge about the forms and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to eminent	
16.	URD 302	Jadeed Nazm	2017	Out comes (1) Understanding the forms of Urdu Nazm. (2) Critically estimate and explain the art and technique of	

17.	URD 303	Urdu Tanqeed	2017	<p>Out come</p> <p>(1) The learner would understand about the mile stones of Urdu Novel.</p> <p>(2) The learner would understand the technical features of Urdu Novel.</p> <p>(3) The learner would understand about the Urdu Novel writers.</p> <p>Out come</p> <p>(1) Knowledge about tradition of Urdu Afsana.</p> <p>(2) Awareness of literary trends and its impact on Urdu Afsana.</p> <p>(3) Identifying and distinguishing the elements in Urdu Afsana</p> <p>Course Outcomes:</p>	
18.	URD 304 A URD 304 B URD 304 C URD 304 D	<p>(a) Sir Syed ka Khusoosi Mutalea</p> <p>(b) Iqbal ka Khusoosi Mutalea</p> <p>(c) Faiz ka Khusoosi</p>	2017	<p>Course Outcomes:</p> <p>(1) The learner will know about the aims and objectives of the Journalism.</p> <p>(2) Distinguish between writings of news paper, radio and television.</p> <p>(3) The learner will know about the different fields of Urdu</p>	

19.	URD 305 A URD 305 B URD 305 C	(a) Urdu Ghazal (b) Jadeed Dakani Shairi (c) Urdu Afsana	2017	Course Outcomes: (1) Knowledge about Jadeed Dakani Shairi. (2) Understand Jadeed Dakani Shairi and its vocabulary and diction. (3) Critical awareness about 5 eminent poets of Jadeed Dakani. Course Outcomes:	
20.	URD 401	Urdu Drama	2017	Course Outcomes: (1) Knowledge of Basic Linguistics. (2) Awareness about ancient and modern Indo-Aryan languages.	
21.	URD 402	Adabi Tehreekat aur Rujhanat	2017	Out comes (1) Knowledge about research, types of research and method of research. (2) Distinguish between various types of research writings.	

22.	URD 403	Tanz –o- Mizah	2017	<p>Out come</p> <p>(1) Knowledge about Literary criticism.</p> <p>(2) Vies and contributions of Hali and Shibli on literary criticism.</p> <p>(3) Understanding 6 schools of literary criticism.</p> <p>Out come</p> <p>(1) Understand the tradition of Ghari Afsanavi Adab and its salient features.</p> <p>(2) Literary importance of Maktoob Nigare and Inshaiya.</p> <p>(3) Literary importance of Khaka and Safarnama.</p> <p>Course Outcomes:</p> <p>(1) Understand the literary contributions of Altaf Husain Hali.</p>
23.	URD 404 A URD 404 B URD 404 C URD 404 D	(a) Urdu Tarjuma Nigari (b) Urdu Marsiya (c) Urdu Khudnavisht	2017	<p>Outcomes:</p> <p>(1) Able to know the history and trends of Telugu, Hindi and English languages.</p> <p>(2) Gain the comparative knowledge of various languages and</p>
24.	URD 405 A URD 405 B URD 405 C	(a) Ibtdayi Urdu (b) Tehqeeq - Tariqekar (c) Urdu Qaseeda	2017	<p>Course Outcomes:</p> <p>(1) Specialized in the contributions of Sir Syed Ahmed Khan.</p> <p>(2) Contributions of Sir Syed Ahmed Khan, as literary person and as a educationist.</p> <p>(3) Understanding the contributions of his literary friends</p> <p>Course Outcomes:</p>

S.V.U. College of Sciences

28. Anthropology

S. No.	Name of the Course Programme	Course Code	Title of the Course	Years	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	M.Sc. Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2017	<ul style="list-style-type: none"> a. Exposed to the basic introductory background about Socio-cultural Anthropology, its historical background and relation to other branches b. Provides knowledge about the entire subject matter of the socio-cultural anthropology as well as its different sub-branches. c. Exposed to social institutions d. Know the religion beliefs, rituals and myth
2	M.Sc. Anthropology	ANO : 102	Introduction to Biological Anthropology	2017	<ul style="list-style-type: none"> a. Exposed to the basic concept, meaning and scope of Biological

					<p>Anthropology</p> <ul style="list-style-type: none"> b. Explain how human being acts as the central figure of Anthropology c. Elucidate the major divisions of Biological/ physical Anthropology d. Know the inter-relationship between Biological Anthropology and other sciences e. To know how Man evolved in animal kingdom f. To understand how evolution has occurred and what are the evidences of evolution and addresses human variation and the causes of variations
3	M.Sc. Anthropology	ANO-103	Introduction to Archaeological Anthropology	2017	<ul style="list-style-type: none"> a. Able to define archaeological anthropology and its branches b. Understand the geological timescale, tool typology and technology c. The Course will explain the basic

					<p>concepts and terminology used in prehistoric archaeology</p> <p>d. Understand chronological and cultural determinants of Indian and European prehistory</p>
4	M.Sc. Anthropology	ANO-104P	Somatometry & Somatoscopy	2017	<p>a. Able to define archaeological anthropology and its branches</p> <p>b. Understand the geological timescale, tool typology and technology</p> <p>c. The Course will explain the basic concepts and terminology used in prehistoric archaeology</p>
5	M.Sc. Anthropology	ANO 105p	Archaeological Anthropology	2017	
6.	M.Sc. Anthropology	ANO 106	Economic and Political Anthropology	2017	<p>a. Able to learn meaning and scope of economic anthropology</p> <p>b. To understand the division of labor by gender and age, exchange of goods and gifts, and to understand the market economy.</p> <p>c. Able to know the historical</p>

					<p>background of Political Organization besides types and trends of Political Organization including types like i.e. Band, Tribe, Chiefdoms and State</p> <p>d. To know the local institutions: panchayats (traditional and statutory)</p>
7.	M.Sc. Anthropology	ANO 107	Human Values and Professional Ethics -1	2017	
8.	M.Sc. Anthropology	ANO 201	Comparative Ethnography and Indian Anthropology	2017	<p>a. To understand the major ethnological regions of the world</p> <p>b. To know the ethnic and linguistic classifications</p> <p>c. Able to understand the traditional Indian culture</p> <p>d. To know the contributions of Indian anthropologists</p>
9.	M.Sc. Anthropology	ANO 202	Principals of Genetics	2017	<p>a. understand about the scope of genetics and its historical development</p> <p>b. to learn the biology of cell and cell</p>

					<p>division</p> <p>c. Exposed to the patterns of the inheritance</p> <p>d. Know about blood groups and their anthropological perspective</p>
10	M.Sc. Anthropology	ANO 203	Research Methods in Anthropology	2017	<p>a. To understand the fieldwork traditions in Anthropology</p> <p>b. To understand the concept of research and its purpose</p> <p>c. highlight the conceptual structure of a research design</p> <p>d. understand the various statistical tools in the analysis and interpretation of the data</p>
11	M.Sc. Anthropology	ANO 204P	Craniology and Craniometry	2017	
12	M.Sc. Anthropology	ANO205P	Doing Ethnography	2017	
13	M.Sc. Anthropology	ANO206	Prehistoric India	2017	<p>a. learn the regional distribution of lower, middle, and upper Paleolithic cultures</p> <p>b. To learn the Mesolithic culture and</p>

					<p>typo- technology</p> <p>c. Learn the regional distributions of Neolithic cultures</p> <p>d. understand the copper and iron age</p> <p>e. exposed to the distribution of megaliths</p>
14	M.Sc. Anthropology	ANO 207	Human Values and Professional Ethics -II	2017	
15	M.Sc. Anthropology	ANB 301	Human Evolution and Fossil Evidence	2017	<p>a. Understand the evolutionary trends of primates, prosimians to homosapiens</p> <p>b. To know the hominid evolution</p> <p>c. To know the Neanderthals distributions and extension</p> <p>d. Exposed to the homo sapiens distribution and feature of human species</p>
16	M.Sc. Anthropology	ANB 302	Human Genetics	2017	<p>a. understand the meaning and scope of human genetics</p> <p>b. know methods of studying human</p>

					<p>chromosomes and chromosomal abnormalities</p> <p>c. depict Inborn errors of metabolism with typical examples and human human ABO blood group system and its fundamentals</p> <p>d. know the concept of “one-gene-one-enzyme hypothesis” which explains development of genetic diseases/disorders caused by defective genes controlling the functions of enzymes in metabolic pathways</p>
17	M.Sc. Anthropology	ANB 303P	Human Osteology and Osteometry	2017	
18	M.Sc. Anthropology	ANB 304P	Dermatoglyphics	2017	
19	M.Sc. Anthropology	ANB 305	Anthropological Demography	2017	<p>a. Know about the different population growth theories</p> <p>b. Learn the basic demographic variables</p> <p>c. Understand how the different factors regulates the population growth</p> <p>d. Understand the different demographic</p>

					<p>models</p> <p>e. Learn the genetic consequences of family planning</p>
20	M.Sc. Anthropology	ANB 306	Biostatistics and Computer Applications	2017	<p>a. To understand the concept of research and its purpose</p> <p>b. To enlighten the process of research and conceptual structure of a research design</p> <p>c. Understand the disease outcomes through measurement of descriptive, analysis of variance and regression models through computer applications</p> <p>d. Know the use of computers in the analysis data and power point presentation</p>
21	M.Sc. Anthropology	ANB 307	Forensic Anthropology	2017	<p>a. able to know about forensic anthropology, a specialized, applied branch of physical/biological anthropology which deals with the crime investigation</p>

					<ul style="list-style-type: none"> b. understand how dermatoglyphic, somatoscopic characteristics and body fluids helpful in crime investigation c. know the use of skeletal remains in forensic investigations d. know the importance of modern methods in crime investigation
22	M.Sc. Anthropology	ANB 308	Palaeoanthropology	2017	<ul style="list-style-type: none"> a. understand the geological time scale and Pleistocene epoch b. know about tool making techniques and tool types c. gain knowledge about dating methods d. learn about Paleolithic, Mesolithic and Neolithic cultures in India
23	M.Sc. Anthropology	ANB 401	Biological Anthropology	2017	<ul style="list-style-type: none"> a. Understand the basic concept, meaning and scope of Biological Anthropology b. Know the biological variation in modern human populations

					<ul style="list-style-type: none"> c. Understand the human adaptability and impact of urbanization on humans d. Bio-cultural aspects of health and disease
24	M.Sc. Anthropology	ANB-402	Human Population Genetics	2017	<p>Students will</p> <ul style="list-style-type: none"> a. Explain the basic terms/concepts of human population genetics b. Appreciate the mechanisms of evolutionary forces in shaping biological diversity c. Understand the importance of Hardy – Weinberg Equilibrium especially the gene frequency changes with respect to Mutation, Genetic drift, Selection, Gene flow and to investigate them in empirical situations in human populations d. Know about breeding isolation and its implications in human population

					<p>genetics.</p> <p>e. Understand various mating patterns (inbreeding and types of consanguineous marriages) and measure the inbreeding in families</p>
25	M.Sc. Anthropology	ANB-403P	Advanced Biological Anthropology	2017	
26	M.Sc. Anthropology	ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2017	
27	M.Sc. Anthropology	ANB -405	Human Growth, Physique and Nutrition	2017	<p>a. Know about the Differentiate the term growth, maturation and development</p> <p>b. To learn the methods of studying growth and the factors affecting the growth</p> <p>c. To understand the Human Physique and its Relation of Function, Disease and Behavior.</p> <p>d. Know the socio-cultural aspects of nutrition and nutrients in health and diseases</p>

28	M.Sc. Anthropology	ANB 406	Applied Biological Anthropology	2017	<ul style="list-style-type: none"> a. Know about various applications of anthropometry and kinanthropometry in various fields b. Understand about the importance of forensic anthropology in crime investigations c. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy d. Learn about the human geno project
29	M.Sc. Anthropology	ANB 407	Medical Genetics	2017	<ul style="list-style-type: none"> a. Understand the overplanting areas of anthropology and genetics, anthropology and medicine (Disease) b. Understand the different methods of identification genetic diseases c. Know about epidemiology, socio cultural and ecological dimensions of genetic diseases control and treatment d. Learn the knowledge, attitude and

					currying practices of genetic diseases
30	M.Sc. Anthropology	ANB-408	Epidemiology	2017	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology c. Know about Complications of obesity on health its prevention and control d. Understand the complex web of biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
31	M.Sc. Anthropology	ANB -409	Fundamentals of Anthropology	2017	<ul style="list-style-type: none"> a. Understand the meaning, scope and relation with other branches of Biological

					<p>Anthropology.</p> <p>b. Understand the meaning, scope and relation with other branches of Socio-Cultural Anthropology.</p> <p>c. Understand the meaning, scope and relation with other branches of Archeological Anthropology</p> <p>d. Exposed to race, ethnicity and racial classification</p>
32	M.Sc. Anthropology	ANS 301	Theories of Culture	2017	<p>a. Understand the Conceptual Contributions of E. B. Tylor, B. Malinowski, A. L. Kroeber, L. White, Unilineal Evolution (L. H. Morgan and E. B. Tylor); Multilineal Evolution (J. Steward); Universal Evolution (L. White)</p> <p>b. To know the British School; German-Austrian School; American – Distribution School of culture</p> <p>c. Know the Patterns of Culture (R. Bendict); Basic Personality, Model</p>

					<p>Personality (Kardiner, Linton, Cora Dubois); Selfhood (Murphy); Symbolic (G. Obeyesekere)</p> <p>d. understand the historical approaches of culture</p>
33	M.Sc. Anthropology	ANS 302	Social Anthropology of Complex Societies	2017	<p>a. Learn the meaning and approach of great and little traditions</p> <p>b. learn about the peasant societies and contemporary peasant societies</p> <p>c. know the culture of poverty, institution and complex societies</p> <p>d. understand problems of urbanization and social changes</p>
34	M.Sc. Anthropology	ANS 303P	Participatory of Research methods in Development Process	2017	
35	M.Sc. Anthropology	ANS 304P	Non-Governmental Organizations and Extension studies	2017	
36	M.Sc. Anthropology	ANS 305	Ecological Anthropology	2017	<p>a. Understand the environment and ecosystem in understanding the cultural</p>

					<p>modifications</p> <p>b. Know about the cultural ecology, cognitive ecology, single unified ecology, and ethno ecology.</p> <p>c. Learn issues and prospects on development projects and displacement</p> <p>d. Understand Biodiversity for sustainable development Knowabout Ecological protest movements (Chipko and Narmada Bachao Andolan (NBA));</p>
37	M.Sc. Anthropology	ANS 306	Applied Anthropology- Indigenous Communities	2017	<p>a. Know the Similarities and Differences between Applied and Action Anthropology, Indigenous communities and applied anthropology. Indigenous rights.</p> <p>b. Know the process of acculturation and assimilation, socialization</p> <p>c. Know about applications of Anthropology in the management of health, agriculture, education and biodiversity and poverty eradication</p>

					d. Gain the knowledge on tribal welfare, tribal problems, forest and property rights, shifting cultivation and tribal movements
38	M.Sc. Anthropology	ANS 307	Anthropology of Religion Sacred complexes in India	2017	<p>a. Know about meaning and relation with power and political leverages, ethnic identity and other aspects of culture in tradition and modern societies</p> <p>b. Know the different anthropological theories of religion</p> <p>c. Know the issues of right of food among by Hindus, five symbols of sikh identity, Aspects of sarora ritual and Shamansism, and Christianity in India</p> <p>d. To understand Contemporary issues of religious violence, secularism and fundamentalism</p>
39	M.Sc. Anthropology	ANS 308	Anthropology and Career	2017	a. Understand the anthropology in

			Promotion		<p>competitive examinations</p> <p>b. Know about participatory research appraisal</p> <p>c. Exposed to the issues in tribes, tribal problems and cast populations</p> <p>d. Learn the books to be consulted, review of questions and scheme of valuation</p>
40	M.Sc. Anthropology	ANS 401	Structural Anthropology	2017	<p>a. Know the social structure and function of culture</p> <p>b. Understand about the ideal and real social structure and social organization</p> <p>c. Know the general notion of structuralism</p> <p>d. Learn the symbols and structure</p>
41	M.Sc. Anthropology	ANS-402	Medical Anthropology	2017	<p>a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of</p>

					<p>public health.</p> <p>b. Understand the etiology, control of infections and non-infections diseases</p> <p>c. Understand the ethno-medicine in the management of health and illness behavior</p> <p>d. Understand the modern medical systems and health care delivery services</p>
42	M.Sc. Anthropology	ANS-403P	Computer Applications	2017	
43	M.Sc. Anthropology	ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2017	
44	M.Sc. Anthropology	ANS -405	Developmental Anthropology	2017	<p>a. Know about the Concept of Development and Sustainable Development</p> <p>b. Understand the steps in project preparation, goals, process of implementation and monitoring.</p> <p>c. Role of government, NGOs and peoples participation in development</p>

					d. Know the watershed management and irrigation, resettlement, (Narmada) poverty Alleviation (Velugu); Primary Education (VECs
45	M.Sc. Anthropology	ANS 406	Culture and Management	2017	<p>a. Know the concept of organizational culture. Its links with cultural anthropology Organizational ethnography. Anthropology of work</p> <p>b. Understand the Theories of organizational culture. Different anthropological traditions</p> <p>c. Know the How culture affect management Changes in management styles Future outlook.</p> <p>d. To understand the Ethno methodological approaches, Organizational symbolism. Integration, differentiation and fragmentation as three perspective approaches to organizational culture</p>
46	M.Sc. Anthropology	ANS 407	Anthropology of Displaced Populations	2017	a. Know the peoples perception towards development and displacement

					<ul style="list-style-type: none"> b. Understand the role of government and non-government agencies in the process of displacement, resettlement and rehabilitation. c. Understand policy issues relating development and displacement in legal implications of displacement and rehabilitation d. Learn the Socio-Cultural effects of displacement, Socio disorganization, process of disintegration and reintegration
47	M.Sc. Anthropology	ANS-408	Visual Anthropology	2017	<ul style="list-style-type: none"> a. Know about the concept, scope and Historical Development of visual anthropology b. Know about the appraisal of ethnographic films in cultural context c. Knowledge about descriptive studying of Visual data produced by Cultures d. To understand the ethnographical films, still photos film shootings and

					commentary
48	M.Sc. Anthropology	ANS -409	Tribal Studies	2017	<ul style="list-style-type: none"> a. Understand the classification and distribution of tribes b. Know the tribal problems like Land Alienation, Indebtedness, Migration, and Cultural Degradation. c. To know the shifting cultivation, tribal education and tribal health d. To know the Fifth and Sixth Schedules Constitutional safeguards

29. Biochemistry

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	BCH101	Biochemical and Biophysical methods	2018	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and

				Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	BCH 102	Molecular Physiology and community nutrition	2018	1. Gain the knowledge about circulatory and excretory systems. 2. Know the importance of muscular and nervous system. 3. Health benefits and malnutrition of proteins and fats. 4. Know the importance of nutrition in maintenance of health and diseases.
3	BCH 103P	Practical related to Biochemical Preparations and Analysis	2018	1. Learn safety and precautionary measures for working in a laboratory. 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological samples.
4	BCH 104P	Practical related to Analytical methods	2018	1. Learn how to standardize various biomolecules. 2. Separate biomolecules by paper chromatography and thin layer chromatography 3. Demonstrate separation of protein by electrophoresis. 4. Isolation and spectrophotometric characterization of plant pigments.
5	BCH 105P	Human values and Professional ethics-I	2018	1. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 2. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 3. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 4. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas

				5. Gain the knowledge about views on Manu and Yajnavalkya
6	BCH 106	Cell and Biomolecules	2018	<ol style="list-style-type: none"> 1. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 2. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 3. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 4. Understand the concept of structural organization of nucleic acids
7	BCH 201	Energy metabolism	2018	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism. 3. Gain in knowledge in Carbohydrate metabolism and their associated disorders. 4. Describe the details of lipid metabolism.
8	BCH 202	Metabolism of Nitrogen based molecules	2018	<ol style="list-style-type: none"> 1. Understand the anabolic and catabolic reactions of proteins and aminoacids. 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	BCH 203P	Practical related to Enzymology	2018	<ol style="list-style-type: none"> 1. Learn about estimation of various enzymes in biological sample. 2. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 3. Learn about the factors affecting enzyme activity and determination of K_m. 4. Demonstrate the Immobilization of enzymes.

10	BCH 204P	Practical related to Molecular Biology	2018	<ol style="list-style-type: none"> 1. Isolate nucleic acids from various sources. 2. Estimate the nucleic acids quantitatively. 3. Determine the melting temperature. 4. Determine the purity of DNA by UV method.
11	BCH 205	Human values and Professional ethics-II	2018	<ol style="list-style-type: none"> 1. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 2. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 3. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 4. Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population. 5. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy.
12	BCH 206	Enzymology	2018	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behavior and allosteric regulation.
13	BCH 301	Microbial Biochemistry and Genetics	2018	<ol style="list-style-type: none"> 1. Understand the basics of microbiology like nomenclature and classification of microorganisms, understand the various biological and non-biological method to control microorganisms

				<ol style="list-style-type: none"> The student will learn about different mode of nutrition in microorganisms and about viruses - Isolation, purification and characterization. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. Gain knowledge in bacterial genetics includes the different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism(CRISPR) and Describe the various types of mutations and its effect.
14	BCH 302	Molecular Biology	2018	<ol style="list-style-type: none"> The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. Learn about genetic code and their evolution. Gain knowledge in Different stages and components of protein synthesis.
15	BCH 303P	Practical related to Microbiology	2018	<ol style="list-style-type: none"> Handle the microscope. Learn Methods of sterilization and preparation of various culture media, Purification techniques. Identification of isolated bacteria, and Growth curve of microorganism. Learn Staining techniques for bacteria and yeast. Gain knowledge in the Preparation of wine from Grapes. Production and estimation of alcohols, citric acid, lactic acid etc.
16	BCH 304P	Practical related to Clinical Biochemical Analysis	2018	<ol style="list-style-type: none"> Collect and maintain the biological samples for clinical assay. Estimate the blood and serum enzymes for diagnosis of diseases. Qualitatively analyse the abnormal constituents in urine. Work with diagnostic kits
17	BCH 305 Generic	a) Molecular Endocrinology	2018	<ol style="list-style-type: none"> Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands.

	Elective (Two papers out of three)	b) Clinical Biochemistry and Cell and Developmental Biology		<ol style="list-style-type: none"> 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
18	BCH 305 B	Clinical Biochemistry	2018	<ol style="list-style-type: none"> 1. Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. 2. Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. 3. Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract. 4. Investigate the serum enzymes in liver
19	BCH-305c	Cell and Developmental Biology	2018	<ol style="list-style-type: none"> 1. Acquire knowledge on basic concepts of Developmental Biology. 2. Gain the proficient knowledge about zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Acquire knowledge about biomembrane concept and various membrane transport systems
20	BCH 306 Open Elective to others	a) General Biochemistry	2018	<ol style="list-style-type: none"> 1. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 2. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 3. Understand the concept of structural organization of nucleic acids. <ol style="list-style-type: none"> 1. Describe the Structure of porphyrins, Chemistry and functions of water and fat soluble vitamins. 2. Students will be able to know how to conserve natural resources

		b)Environmental Biochemistry		<p>for future.</p> <ol style="list-style-type: none"> 3. Students will be able to describe differing types of <i>ecosystems</i> and their characteristic features. 4. Gain the knowledge about different types of pollution in the environment. 5. Know the Relation between human population and environment. <ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
21	BCH 401	Genetic Engineering	2018	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research. 5. principle, Bioinstrumentation and applications of spectroscopy techniques.
22	BCH 402	Technical Writing,	2018	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research.

		Biostatistics and Bioinformatics		<ol style="list-style-type: none"> 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in biological sequence analysis
23	BCH 403P	Practical related to Immunology and Hematology	2018	<ol style="list-style-type: none"> 1. Collect the blood samples and handle the microscope. 2. Analyze the blood samples. 3. Expert in immunodiffusion and immunoelectrophoresis techniques
24	BCH 404P	Practical/Project work	2018	
25	BCH 405 Generic Elective	<p>a) Immunology</p> <p>b) Applied Biochemistry</p>	2018	<ol style="list-style-type: none"> a. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced. b. Out line, compare and contrast the key mechanism of innate and adaptive immunity. c. Gain knowledge on undesirable immunological reactions and their complication in health management. d. 4.Apply knowledge in disease diagnosis through serological tests. <ol style="list-style-type: none"> 1.Gain knowledge in Fermentation Technology and industrial production of chemicals. 2. Learn Industrial application of Enzyme Technology. 3. Gain knowledge in Applications of hybridoma technology. 4. Understand the applications of genetic engineering in biotechnology and Genetically Modified Organisms. 5. Understand the Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins; <ol style="list-style-type: none"> 1.Gain knowledge in special features of secondary plant metabolism. 2Know the evolutionary studies Origin of basic biological molecules. 3Understand the Concepts of natural evolution and population genetics.

		c)Plant Biochemistry		
26	BCH 406 Open Elective to others (For other department students)	a) Research Methodology b) Biochemistry of diseases	2018	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis <p>1Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. 2Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. 3Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract. 4.Investigate the serum enzymes in liver diseases</p>
27		C)Nutritional Biochemistry	2018	<ol style="list-style-type: none"> 1. Determine the body composition and body weight by using various methods. 2. To describe the importance of protein and fats. 3. Gain knowledge on vitamins and minerals to maintain health. 4. Acquire knowledge on nutritional importance in different ages in the life

Immuno technology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	Core 1	Biochemical and Biophysical methods	2017	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	Core 2	Molecular Physiology and community nutrition	2017	<ol style="list-style-type: none"> 5. Gain the knowledge about circulatory and excretory systems. 6. Know the importance of muscular and nervous system. 7. Health benefits and malnutrition of proteins and fats. 8. Know the importance of nutrition in maintenance of health and diseases
3	Core 3P	Practical related to Biochemical Preparations and Analysis	2017	<ol style="list-style-type: none"> 1. Learn safety and precautionary measures for working in a laboratory. 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological

				samples.
4	Core 4P	Practical related to Analytical methods	2017	<ol style="list-style-type: none"> 1. Learn how to standardize various biomolecules. 2. Separate biomolecules by paper chromatography and thin layer chromatography 3. Demonstrate separation of protein by electrophoresis. 4. 4. Isolation and spectrophotometric characterization of plant pigments
5	Compulsory Foundation	Cell and Biomolecules	2017	<ol style="list-style-type: none"> 6. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 7. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 8. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 9. Understand the concept of structural organization of nucleic acids.
6	Elective foundation	Human values and Professional ethics-I	2017	<ol style="list-style-type: none"> 10. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 11. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 12. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 13. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas. 14. Gain the knowledge about views on Manu and Yajnavalkya.
7	Core 1	Energy metabolism	2017	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism.

				<ol style="list-style-type: none"> Gain in knowledge in Carbohydrate metabolism and their associated disorders. Describe the details of lipid metabolism.
8	Core 2	Metabolism of Nitrogen based molecules	2017	<ol style="list-style-type: none"> Understand the anabolic and catabolic reactions of proteins and aminoacids. Gain knowledge in the importance of aminoacids as biosynthetic precursors. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. How toxic chemicals metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	Core 3	Practical related to Enzymology	2017	<ol style="list-style-type: none"> Learn about estimation of various enzymes in biological sample. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. Learn about the factors affecting enzyme activity and determination of K_m. Demonstrate the Immobilization of enzymes
10	Core 4	Practical related to Molecular Biology	2017	<ol style="list-style-type: none"> Isolate DNA from bacterial, plant and animal cells and RNA from yeast cells. Estimate concentrations of DNA and RNA by conventional methods and UV absorption methods. Determine the melting temperature(T_m) of DNA. Learn procedures for isolation of phage M_{13} and single and double standard M_{13}DNA.
11	Compulsory Foundation	Enzymology	2017	<ol style="list-style-type: none"> Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking

				place in living systems. 4. Describe the concepts of co-operative behaviour and allosteric regulation
12	Elective foundation	Human values and Professional ethics-II	2017	6. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 7. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 8. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 9. Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population. 10. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy
13	Core 1	Microbial Biochemistry and Genetics	2017	1. Understand the basics of microbiology like nomenclature and classification of microorganisms and different modes of nutrition in microorganisms. 2. Learn and understand the various biological and non-biological methods to control microorganisms and Biology of subviral agents – Viroids, Prions, Satellite viruses. 3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. 4. Gain knowledge in bacterial genetics like different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism (CRISPR) and various types of mutations and their effects
14	Core 2	Immunology	2017	1. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity 3. Gain knowledge on undesirable immunological reactions and

				their complications in health management 4. Apply knowledge in disease diagnosis through serological tests
15	Core 3	Practical related to Microbiology	2017	<ol style="list-style-type: none"> 1. Handle the microscope. 2. Learn Methods of sterilization and preparation of various culture media, Purification techniques. 3. Identification of isolated bacteria, and Growth curve of microorganism. 4. Learn staining techniques for bacteria and yeast. 5. Gain knowledge in the Preparation of wine from Grapes. 6. Production and estimation of alcohols, citric acid, lactic acid etc
16	Core 4	Practical related to Immunology	2017	<ol style="list-style-type: none"> 1. Perform RBC, WBC count and differential count. 2. Do all haematological tests that will be done in clinical labs. 3. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 4. Do Heme agglutination tests for identification of different antigens
17	Generic Elective (Two papers out of three)	a) Molecular Biology	2017	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b)Molecular Endocrinology		<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.

		c) Cell and Developmental Biology		<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Gain knowledge about Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis.
18	Open Elective to others (For other department students)	a) Basics of Immunology	2017	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Outline, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation. 4. Apply knowledge in disease diagnosis through serological tests.
		b) Immunotechniques		<ol style="list-style-type: none"> 1. To purify and analyse the antigens and antibodies. 2. To apply different Hybridization techniques and ELISA, RIA. 3. To detect various diseases by application of anti sera. 4. To engineer antibodies and catalytic antibodies and produce drugs to allergies
19	Core 1	Microbial Biochemistry and Genetics	2017	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in

				<p>different operons.</p> <p>3. Know the techniques for transfer and expression of cloned gene and</p> <p>4. Apply the knowledge of genetic engineering in biological research</p>
20	Core 2	Immunology	2017	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
21	Core 3	Practical related to Microbiology	2017	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
22	Core 4	Practical related to Immunology	2017	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing.

23	Generic Elective (Two papers out of three)	a) Molecular Biology	2017	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b) Molecular Biology	2017	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones
		c) Cell and Developmental Biology	2017	<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis
24	Open Elective to others (For	c) Basics of Immunology Immunotechniques	2017	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.

	other department students)			<p>3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation.</p> <p>4. Apply knowledge in disease diagnosis through serological tests.</p>
25	Open Elective (b)	<i>Immunotechniques and their Applications</i>	2017	<p>1. To purify and analyse the antigens and antibodies.</p> <p>2. To apply different Hybridization techniques and ELISA, RIA.</p> <p>3. To detect various diseases by application of antiisera.</p> <p>4. To engineer antibodies and catalytic antibodies and produce drugs to allergies.</p>
26	Core 1	<i>Genetic Engineering</i>	2017	<p>1. Familiar with the tools and techniques for isolation and purification of genes, vector construction.</p> <p>2. Understand the mechanisms of regulation of gene expression in different operons.</p> <p>3. Know the techniques for transfer and expression of cloned gene and</p> <p>4. Apply the knowledge of genetic engineering in biological research</p>
27	Core 2	<i>Technical Writing, Biostatistics and Bioinformatics</i>	2017	<p>1. Discuss the various steps involved in conducting research.</p> <p>2. Learn to apply hypothesis testing via some of the statistical distributions.</p> <p>3. Develop understanding about Biological data and database search tools.</p> <p>4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis.</p>
28	Core 3 P	<i>Practical related to Clinical Immunology, Biostatistics and Bioinformatics</i>	2017	<p>1. Use diagnostic kits to test different types of auto immune diseases.</p> <p>2. Prepare Rabbit for performance of immunological studies.</p> <p>3. Perform Single Radial Immunodiffusion.</p>

				<ol style="list-style-type: none"> 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
29	Core 4	<i>Project Work</i>	2017	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing
30	Generic Elective (a)	<i>Clinical Immunology</i>	2017	<ol style="list-style-type: none"> 1. Understand different types of immunity and components of the Immune System. 2. Gain knowledge on auto immune diseases, Animal models used to study them and the treatment for them. 3. Familiar with Clinical manifestation of graft rejection, general immunosuppressive therapy and immune tolerance to allografts. 4. Acquire the knowledge on oncogenes, Psychoimmunology and neuroimmunomodulation
31	Generic Elective (b)	<i>Applied And Molecular Immunology</i>	2017	<ol style="list-style-type: none"> 1. Develop skill in production of monoclonal antibodies. 2. How better enzyme immobilization enhances its activity and their industrial and clinical applications. 3. Familiar with different types of vaccines and how they help in prevention of diseases. 4. Acquire the knowledge on IPR and procedures for patent filing
32	General Elective (C)	<i>Immunopharmacology</i>	2017	<ol style="list-style-type: none"> 1. Understand about drug receptors, pharmacodynamics, pharmacokinetics, drug biotransformation. 2. Acquire knowledge on Immunomodulation therapy, malignancy therapy. 3. Gain knowledge on Prostaglandins, thromboxanes, leukotrienes and inhibitors of these molecules formation. 4. Familiar with Nitric oxide and its immunological effects.

33	Open Elective a	<i>Research Methodology</i>	2017	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Acquire hands on training on various computational tools and techniques. 3. Learn to apply hypothesis testing via some of the statistical distributions. 4. To acquire knowledge on research proposals and motivate students towards research
34	Open Elective (b)	<i>Immunological Diseases and Therapeutics</i>	2017	<ol style="list-style-type: none"> 1. Maintain the Clinical Immunology lab with all required standards. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on different types of immunodeficiencies, their treatment and about autoimmune disorders. 4. Familiar with Clinical manifestation in graft acceptance or rejection and how immunosuppressive therapy is useful. And about cancer immunotherapy.

30. Botany

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2017	<ol style="list-style-type: none"> 1. The student able to distinguish different species of lower plant groups. 2. Cultivation methods of Algae for industrial production of Single Cell Proteins, Agar Agar ,carragin and Neutraceuticals.Discuss the importance of morphological structure, classification, reproduction and economic importance of Algae.

	BOT-102	Taxonomy of Angiosperms	2017	<ol style="list-style-type: none"> 1. Plant identification skills 2. Herbaria preparation and documentation.
	BOT-103	Microbiology	2017	<ol style="list-style-type: none"> 1. Isolation and identification of Pathogenic and Non-Pathogenic micro-organisms. 2. Methods of cultivation of economically/industrially important microorganisms. 3. Plant disease identification and control methods.
	BOT-104	Human Values and Professional Ethics - I	2017	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of	2017	<ol style="list-style-type: none"> 1. Identification of different Algal forms 2. Morphological description and use of Floral Keys for plant identification.

		Angiosperms		
	BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2017	<ol style="list-style-type: none"> 1. Isolation, culture and staining methods for identification of micro-organisms. 3. Diagnosis of Plant deceases based on symptoms and control methods. 4. Histology of vegetative and reproductive structures and isolation
	BOT-201	Plant Ecology	2017	<ol style="list-style-type: none"> 1. Concepts of Ecology Students, relation between biotic and abiotic factors in an ecosystem. 2. Interaction between biotic communities and ecological energetics 3. Environmental pollution, Global warming and Environmental protection strategies and green energy production
	BOT-202	Plant Biochemistry and Metabolism	2017	<ol style="list-style-type: none"> 1. Biosynthesis of plant primary metabolites and chemistry. 2. Plant physiological processes water relation, plant nutrition and energy metabolism, 3. Metabolic changes in response to biotic and abiotic stress
	BOT-203	Plant Development and Reproduction	2017	<ol style="list-style-type: none"> 1. Wood formation and types 2. Reproductive structures. Mode of Reproduction
	BOT-204	Human Values and Professional Ethics - II	2017	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.

				<ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2017	<ol style="list-style-type: none"> 1. Plant metabolite analysis and metabolic enzyme activity 2. Methods for Phytodiversity analysis.
	BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2017	<ol style="list-style-type: none"> 1. Plant communities 2. Methods for analysis of environmental pollutants 3. Designs of waste water treatment plants. 4. Assessment of effect of Global warming on Plant systems 5. Study of chromosomal morphology and behavior in Mitosis and Meiosis 6. Practical Problem solving on genetic concepts
	BOT-301	Molecular Biology And Techniques	2017	<ol style="list-style-type: none"> 1. Nucleic acids properties and mechanism of DNA replication and damage repair, and Chromatin organization and Cell Cycle regulation

				<ol style="list-style-type: none"> 2. Gene expression, processing of Transcripts and Proteins, and mechanisms of regulation of gene expression in Prokaryotes and Eukaryotes. 3. Principles of Microscopy, Nucleic acid and protein separation and identification techniques and methods
	BOT-302	Biodiversity and Conservation	2017	<ol style="list-style-type: none"> 1. Knowledge on Phytodiversity, biodiversity centres and types of Biodiversity. 2. Phytodiversity analysis using Remote sensing 3. Causes for the loss of phytodiversity and conservation strategies
	BOT-303 IE	Biosystematics	2017	<ol style="list-style-type: none"> 1. Biosystematic Categories, 2. Omega Taxonomy 3. Taximetrics and Concept of Species
	BOT-304IE	Molecular Plant Pathology	2017	<ol style="list-style-type: none"> 1. Symptoms based Diagnosis of Plant Diseases 2. Methods of Plant Disease Management and pest control
	BOT-306 IE	Computer Applications and Bioinformatics	2017	<ol style="list-style-type: none"> 1. Computer Operating systems and MS Office 2. The biological databases and Databases 3. Bioinformatics, tools and its applications.
	BOT-307 IE	Plants and Human Welfare	2017	<ol style="list-style-type: none"> 1. Food Yielding Plants as a source of food, fiber and timber. 2. Plants used in curing human diseases and other ailments in traditional medical systems and Veterinary diseases

				<ul style="list-style-type: none"> 3. Spices and condiments, Non timber forest products. 4. Preparation and application of Bio fertilizers, Bio pesticides, Bio insecticides, mushroom cultivation and plant based preservatives
	BOT-308 IE	Organic Farming and Mushroom Cultivation	2017	<ul style="list-style-type: none"> 1. Different types of compost preparation and their Nutritive value. 2. Biofertilizers and organic preparations, their marketing and farm management. 3. Vermicompost Technology 4. Identification of types of edible and poisonous mushrooms. 5. Method of cultivation of mushrooms and diseases management
	BOT-309 IE	Gardening and Nursery Techniques	2017	<ul style="list-style-type: none"> 1. Nurseries development and Management and Garden designing for different plant groups 2. <i>In vivo</i> and <i>in vitro</i> plant propagation methods 3. Plant nutrition and protection 4. Types of gardens and nurseries
	Practical-I	Molecular Biology And Techniques ; Biodiversity and Conservation	2017	<ul style="list-style-type: none"> 1.. Study of Chromosomal Behavior during Mitosis. 2. Isolation of DNA, RNA and proteins, Quantitative estimation 3. Assignments on DNA structure, Replication and Gene expression 4. Methods for Phytodiversity analysis. 5. Plant diversity conservation methods

	Practical-II	Biosystematics / Molecular Plant Pathology / Computer Applications and Bioinformatics	2017	<p>Biosystematics</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Molecular Plant Pathology</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Computer Applications and Bioinformatics</p> <ol style="list-style-type: none"> 1. Internet – E-mail and mail attachment Downloading 2. Webpage; Search engines; 3. Visit to DNA and Protein database; NCBI; EMBL, Swiss- Prot ;PDB 4. Use of similarity search tools: NBLAST; PBLAST
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				5. Use of literature database Virtual library; Agricola; PubMed
	BOT-401	Molecular Genetics & Genomics and Proteomics	2017	<ol style="list-style-type: none"> 1. Genetic basis of inheritance of genes and their mapping in eukaryotes and microbes 2. Molecular marker techniques and construction of genetic and physical maps. 3. Whole genome sequencing strategies, and structural and functional annotation. 4. Principles and methods of Transcriptome and Proteome analysis. 5. Mechanisms of evolution of genomes, New genes and proteins and construction of Phylogenetic trees. 6. Structural organization of plant genomes, Arabidopsis and rice genomes and applications of genome projects.
	BOT-402	Plant Biotechnology	2017	<ol style="list-style-type: none"> 1. Techniques of Plant Tissue Culture and Applications. 2. Process of r-DNA technology 3. Production of genetically modified crops and Achievements
	BOT-403 IE	Molecular Plant Physiology	2017	<ol style="list-style-type: none"> 1. 1.Signal transduction pathways and Senescence 2. 2.Molecular mechanism of Photosynthesis 3. Synthesis and application of Nanomaterials. 4. Molecular Physiology of Stress and Flowering
	BOT-404 IE	Horticulture and	2017	<ol style="list-style-type: none"> 1. Propagation methods for horticultural crops

		Agricultural Biology		<ol style="list-style-type: none"> 2. Soil science and fertility management for horticultural crops. 3. Seed production technology of horticultural crops.
	BOT-405 IE	Ethnobotany and Phytomedicine	2017	<ol style="list-style-type: none"> 1. Ethnobotanical knowledge 2. Medicinal plant Cultivation, Multiplication, Collection, Processing and Marketing 3. Sources of Plant Medicines, Formulations, Diagnostic features and their Biological activity.
	BOT-406 EE	Herbal Drugs and Cosmetics	2017	<ol style="list-style-type: none"> 1. Plants used by the Tribes for health care and applications of Ethno botany. 2. Identification of locally available Medicinal plants. 3. Methods of Collection, Processing and Storage of Plant Medicines and trade 4. Phytochemicals used in Herbal Cosmetic Preparations 5. Formulation & standardization of various herbal cosmetic products
	BOT-407 EE	Hydroponics	2017	<ol style="list-style-type: none"> 1. Scope, Future developments and applications of Hydroponics. 2. Chemical and physical factors required for plant growth 3. Nutrient Solutions and Media Plant sanitation and disease management

				4. Techniques in Hydroponics and Cultivation of crop plants
	BOT-408 EE	Nano Biotechnology	2017	1. Production of nano scale devices by different methods. 2. Applications of nano devices in medicine and agriculture
	BOT-409 EE	Plant Disease Management	2017	1. Plant disease causing agents 2. Specific diseases of Cereals, Pulses, Vegetables, Fruit Crops, Oil Yielding and Fibre yielding Plants. 3. Plant Disease Management using Physical and Chemical and Bio-Control methods
	Practical – I	Molecular Genetics & Genomics and Proteomics; Plant Biotechnology	2017	1) Isolation of genomic DNA and RNA and Quantification by Spectrophotometry. 2) Preparation of DNA denaturation curve 3) Restriction digestion of DNA, Agarose Gel Electrophoresis 4) PCR amplification of DNA. and RAPD analysis. 5) Precipitation of proteins ,Estimation of protein. 6) Determination of Isoelectric Point of proteins 7) Separation of proteins by SDS-PAGE and size determination 8) Problems related to genomics, proteomics and molecular evolution 9) Establishment of callus, organ and cell cultures
	Practical - II	403 IE – Molecular Plant Physiology /	2017	BOT-403 IE : Molecular Plant Physiology

		<p>404 IE – Horticulture and Agriculture Biology /</p> <p>405 IE – Ethnobotany and Phytomedicine</p>		<ol style="list-style-type: none"> 1. Extraction and Estimation of Chlorophyll pigments. 2. Assay of enzyme activity 3. Estimation of Carbohydrate, proteins and separation 4. Seed viability and germination 5. Metabolite accumulation under stress <p>BOT-404 IE: Horticulture and Agriculture Biology</p> <ol style="list-style-type: none"> 1. Isolation, Characterization and Identification of Rhizobium 2. Outdoor cultivation of Blue green Algae 3. Vermicompost production 4. Multiplication of VAM and Preparation Biofertilizers; 5. Establishment of nursery, different containers, soil transplantation techniques. 6. Plant propagation – layering, cutting, grafting. 7.. Layout and Designing of gardens and Lawns. <p>BOT-405 IE: Ethnobotany and Phytomedicine</p> <ol style="list-style-type: none"> 1. Recording medicinal practices and herbal formulations of tribal medicine by interviews and field study and preparation of report. 2. Development of medicinal plant nurseries in botanical garden. 3. Practical Methods of Cultivation, Propagation, Conservation and Protection of important Medicinal plants to develop
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				<p>familiarity.</p> <ol style="list-style-type: none"> 4. Micro-propagation of Medicinal plants and Production of Callus from different Explants for Specific Biologically active Ingredients. 5. Practical demonstration of collection, processing and storage of Plant Medicines. 6. Demonstration of drug Formulation and Herbal cosmetics. 7. Organoleptic examination and physical and chemical properties.
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31. Biotechnology

S. No.	Name of the Programme	Course Code	Title of the Course	Years of Introduction	of Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	M.Sc. Biotechnology	BTH-101	Structure and functions of	2017	1. Understand the classification of

			Biomolecules		<p>carbohydrates and their biochemical functions.</p> <ol style="list-style-type: none"> 2. Correlate the reactions of amino acids that are basis for identification tests and biochemical pathways. 3. Know the structure of different classes of lipids and their roles in biological systems. 4. Comprehend the structure and functions of nucleic acids
2	M.Sc. Biotechnology	BTH-102	Advanced tools and techniques	2017	<ol style="list-style-type: none"> 1. Learn about various techniques for isolation and concentration of macromolecules. They will also understand the principles and applications of different Microscopes 2. Understand the techniques of chromatography, centrifugation and electrophoresis 3. Achieve a basic understanding of characterization of biomolecules by different Spectroscopic techniques 4. They learn safety measures in handling radioisotopes and familiarize with the various radioisotope tracer techniques and their role

					in biology.
3	M.Sc. Biotechnology	BTH-103P	Practical related to Analytical methods	2017	1. Acquire the skill to perform experiments related to advanced tools and techniques
4	M.Sc. Biotechnology	BTH-104P	Practical related to Biochemical Preparations and Analysis	2017	1. Acquire the skill to perform experiments related to Biochemical preparations
5	M.Sc. Biotechnology	BTH-105	Microbiology and Immunology	2017	5. Acquire the knowledge on classification and structure of different microorganisms 6. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 3. Out line, compare and contrast the key mechanism of innate and adaptive immunity 4. Apply knowledge in disease diagnosis through serological tests
6.	M.Sc. Biotechnology	BTH-106	Human values and Professional ethics-I	2017	Learn the importance of Human values and Professional ethics
7.	M.Sc. Biotechnology	BTH-201	Enzymes and Intermediary metabolism	2017	1. Gain knowledge on different enzymes and their significance 2. Correlate how the living organisms exchange energy and matter with the surroundings for their survival, and store free energy in the form of

					<p>energy-rich compounds</p> <p>3. Recognize how the catabolic breakdown of the substances is associated with release of free energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways</p> <p>4. Apply the knowledge of metabolic pathways to biotechnological and biochemical research.</p>
8.	M.Sc. Biotechnology	BTH-202	Molecular Biology	2017	<p>1. Understand the biochemical composition and genome organization in living cells</p> <p>2. Learn about the mechanism of tissue specific transcription and role of RNA polymerases</p> <p>3. Appreciate the correlation of genetic code with protein synthesis in prokaryotic and eukaryotic cells.</p> <p>4. Gain insights of mechanism of gene expression and regulations</p>
9.	M.Sc. Biotechnology	BTH-203P	Practical related to Molecular Biology	2017	Learn the skill to perform experiments related to Molecular biology
10	M.Sc. Biotechnology	BTH-204P	Practical related to Enzymology	2017	Learn the skill to perform experiments related to Enzymology

11	M.Sc. Biotechnology	BTH-205	Technical writing, Biostatistics and Bioinformatics	2017	<ol style="list-style-type: none"> 4. Discuss the various steps involved in conducting research 5. Learn to apply hypothesis testing via some of the statistical distributions 6. Develop understanding about Biological data and database search tools 7. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
12	M.Sc. Biotechnology	BTH-206	Human values and Professional ethics-II	2017	Learn the importance of Human values and Professional ethics
13	M.Sc. Biotechnology	BTH-301	Genetic Engineering	2017	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes 2. Acquire knowledge on vectors for construction of genomic libraries and cDNA libraries 3. Understand the mechanism of cDNA synthesis 4. Know the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research.

14	M.Sc. Biotechnology	BTH-302	Cell and Tissue culture	2017	Gain the knowledge regarding plant and animal cell cultures. Get the skill to perform micropropagation.
15	M.Sc. Biotechnology	BTH-303P	Practical related to Microbiology	2017	Obtain the skill to perform experiments related to Microbiology and Cell Biology
16	M.Sc. Biotechnology	BTH-304P	Practical related to Tissue culture	2017	<ol style="list-style-type: none"> 1. Learn important milestones in the plant tissue culture and understand the concepts and principles of Plant tissue culture. 2. Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somatic embryogenesis, synthetic seeds and applications. 3. Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. <p>Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization.</p>
17	M.Sc. Biotechnology	BTH-305a	Bioprocess Engineering and Technology	2017	<ol style="list-style-type: none"> 1. Handle the axenic cultures of industrially important microbes and appreciate the

					<p>relevance of microorganisms from industrial context.</p> <ol style="list-style-type: none"> Gain an overview on design, operations and types of fermentation systems Calculate yield and production rates in a biological production process, and also interpret data Apply knowledge on separation and purification of end products of fermentation
18	M.Sc. Biotechnology	BTH-305b	Legal, ethical and implications of Biotechnology	2017	<ol style="list-style-type: none"> Develop awareness on types IPR and patenting process Understand legal and ethical controversies in biotechnological innovations Apply knowledge in providing safety of food, water and environment Gain overview of GM crops and microbes and their impact on environment
19	M.Sc. Biotechnology	BTH-305c	Food and Industrial Biotechnology	2017	<ol style="list-style-type: none"> Acquire knowledge on food preservation, processing and control measures for food poisoning

					<ol style="list-style-type: none"> 2. Establish indoor and outdoor cultivation units for algal cultivation 3. Learn effective management of solid waste for energy production. 4. Appreciate the industrial role of microorganisms in production of biomolecules
20	M.Sc. Biotechnology	BTH-306a	Plant tissue culture	2017	<ol style="list-style-type: none"> 1. Learn important milestones in the plant tissue culture and understand the concepts and principles of Plant tissue culture. 2. Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somatic embryogenesis, synthetic seeds and applications. 3. Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. 4. Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization

21	M.Sc. Biotechnology	BTH-306b	Bioethics	2017	<ol style="list-style-type: none"> 1. Acquire the knowledge on IPR and procedures for patent filing 2. Understand the Legal and Ethical aspects of gene therapy - cloning - Manipulation of human genome -Technology transfer. 3. Learn role of Government, Industries and society in promoting, accepting and regulating the rDNA research 4. Develop understanding on Environmental and Health aspects of Biotechnology
22	M.Sc. Biotechnology	BTH-306c	Bioinformatics	2017	<ol style="list-style-type: none"> 1. Develop understanding about Biological data and database search tools 2. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis 3. Learn about pathway and enzyme databases, Sequence submission tools <p>Develop understanding on protein folding and its significance</p>
23	M.Sc. Biotechnology	BTH-401	Environmental Biotechnology	2017	<ol style="list-style-type: none"> 1. Learn the relation between biotic and abiotic factors in different ecosystem models and predict how changes in free energy

					<p>availability affect ecosystems.</p> <ol style="list-style-type: none"> 2. Appreciate the role of microorganisms in biodegradation and pollution detection 3. Develop skill on large scale production and applications of bio pesticides and bio fertilizers fin agriculture 4. Apply knowledge on solid waste management and reclamation of waste water
24	M.Sc. Biotechnology	BTH-402	Plant Biotechnology	2017	<ol style="list-style-type: none"> 1. Develop skill in production of transgenic plants resistant to biotic and abiotic stress 2. Apply knowledge for industrial production of plant metabolites 3. Cultivate the micro and macro algae of commercial importance on large scale 4. Identify different plant pathogens and apply biological control methods
25	M.Sc. Biotechnology	BTH-403P	Practical related to Immunology	2017	<ol style="list-style-type: none"> 1. Gain skill to perform immunology related experiments
26	M.Sc. Biotechnology	BTH-404	Project work	2017	<ol style="list-style-type: none"> 1. Select the appropriate research design and develop appropriate research hypothesis for a

					research project and acquire hands on training on various tools and techniques employed in executing the project.
27	M.Sc. Biotechnology	BTH-405a	Pharmaceutical Biotechnology	2017	<ol style="list-style-type: none"> 1. Gain knowledge on preparation and formulations of different drugs 2. Develop skill on commercial production of pharmaceutical products for human welfare 3. Learn the techniques of drug validation and vaccine production 4. Understand the bioethical principle, values, concepts and social and judicial implications of pharmaceutical biotechnology
28	M.Sc. Biotechnology	BTH-405b	Animal Biotechnology	2017	<ol style="list-style-type: none"> 1. Understand the organization of reproductive organs and advances in contraception research 2. Learn the techniques of In Vitro Fertilization and artificial insemination 3. Develop skill in molecular techniques for production of transgenic animals 4. Apply knowledge on molecular farming for production of vaccines and hormones

29	M.Sc. Biotechnology	BTH-405c	Applications of Biotechnology	2017	<ol style="list-style-type: none"> 1.Acquire the knowledge on applications of plant, animal and environmental biotechnology 2.Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3.Establish and maintain cell lines for vaccine production 4.Apply knowledge on waste management and recycling for environmental protection
30	M.Sc. Biotechnology	BTH-406a	Tools in Biotechnology	2017	<ol style="list-style-type: none"> 1. Acquire the knowledge on analysis of DNA replication to map site specific points of replication 2. Learn to apply DNA microarrays to detect replication origins 3. Understand the functions of helicase and polymerase in DNA replication 4. Acquire knowledge on sophisticated programmed of genome replication
31	M.Sc. Biotechnology	BTH-406b	Immunology	2017	<ol style="list-style-type: none"> 1. Out line, compare and contrast the key mechanism of innate and adaptive immunity 2. Apply knowledge in disease diagnosis through serological tests

					<p>3. Develop skill in production of monoclonal antibodies</p> <p>4. Gain knowledge on undesirable immunological reactions and their complications in health management</p>
32	M.Sc. Biotechnology	BTH-406c	Applications of Biotechnology	2017	<p>1.Acquire the knowledge on applications of plant, animal and environmental biotechnology</p> <p>2.Develop skill on organic farming and preparation of bio pesticides and bio fertilizers</p> <p>3.Establish and maintain cell lines for vaccine production</p> <p>4.Apply knowledge on waste management and recycling for environmental protection</p> <p>1.</p>

32. Chemistry

Analytical Chemistry

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry I	2017	1. To understand the key features of

				<p>coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes.</p> <ol style="list-style-type: none"> To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2.	CHE-102	Organic Chemistry I	2017	<ol style="list-style-type: none"> To detect stereochemical structures of the molecules, stereoselective and stereo controlled reactions To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates To familiarize with stereospecific synthesis of naturally occurring terpenoids and

				degradation products of terpenoids
3.	CHE-103	Physical Chemistry-I	2017	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
4.	CHE-104	Inorganic Practical- I	2017	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
5.	CHE-105	Organic Practical-I	2017	<ol style="list-style-type: none"> 1. .To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and

				familiarize with methodologies to prepare biologically important molecules.
6.	CHE-106	Physical Practical I	2017	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
7.	CHE-107	General Chemistry-I	2017	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
8.	CHE-108	Human Values and Professional Ethics – I	2017	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct. 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
9.	CHE - 201	Inorganic Chemistry II	2017	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling,

				<p>splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams</p> <ol style="list-style-type: none"> 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reaction
10.	CHE-202	Organic Chemistry II	2017	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
11.	CHE -203	Physical chemistry II	2017	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple

				<p>molecular orbitals and Huckel theory of conjugated systems</p> <ol style="list-style-type: none"> To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
12.	CHE 204	Inorganic Chemistry	2017	<ol style="list-style-type: none"> To separate and determine the two component mixtures. To acquire knowledge in the preparation of metal complexes
13.	CHE 106	Core practical II: Organic Chemistry	2017	<ol style="list-style-type: none"> To familiarize with binary mixture separation and to gain hands-on-experience in purification of the To get knowledge about the chemical behavior of different components and mechanisms
14.	CHE 206	Core practical II: Physical Chemistry	2017	<ol style="list-style-type: none"> To study the determination of cell constant and verification of Onsager equation, strength of strong To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
15.	CHE 207	General Chemistry II	2017	<ol style="list-style-type: none"> To acquire knowledge on ion selective electrodes, solid membrane electrodes and

				<p>glass electrodes</p> <ol style="list-style-type: none"> To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
16.	CHE 208	Human Values and professional ethics-II	2017	<ol style="list-style-type: none"> To understand the concepts of human values, responsibilities of family values and status of women in family and society To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners To gain knowledge on social ethics and understand the characteristics of ethical problems in management. To familiarize environmental ethics, ethical theory and ecological crisis
17.	CHE-AC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2017	<ol style="list-style-type: none"> To know about TG and DTA and applications of different scanning calorimetry. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV

				photoelectron spectroscopy
18.	CHE AC 303 & 304	Core-Practical: Classical Methods of Analysis	2017	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis 2. To gain knowledge on chemistry of alloys 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations
19.	CHE-AC-305A Chemistry III	Organic Chemistry III	2017	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
20.	CHE-AC-305B	Physical Chemistry III	2017	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices-

				<p>Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals</p> <p>3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational-rotational Raman spectroscopy</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
21.	CHE AC 306	Spectral Techniques	2017	<p>1. To know the basic principles of spectroscopy.</p> <p>2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques.</p> <p>3. To Understand the applications of AAS.</p> <p>4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups</p>
22.	CHE AC 306	Chromatographic Techniques	2017	<p>1. To know the stationary and mobile phases in chromatographic techniques.</p> <p>2. To familiarize applications of different chromatographic methods.</p> <p>3. To Understand the principle of chromatographic techniques</p> <p>4. To gain knowledge on the normal phase and reverse phase.</p>
23.	CHE-AC-401	Quality Control and General Principles	2017	<p>1. To diagnose problems in the quality improvement process and Explain each total quality implementation phase</p> <p>2. To know about theoretical basis for the use of</p>

				<p>organic reagents in inorganic analysis.</p> <p>3. To understand different types of kinetic methods and their evaluation and to determine the kinetics of enzyme</p> <p>4. To understand the oxidation reactions with Ce (IV) sulphate solutions and applications of complexometric titrations</p>
24.	CHE-AC 402	: Instrumental Methods of Analysis	2017	<p>1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF).</p> <p>2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).</p> <p>3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis</p> <p>4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I^- and S^{2-}) by using I_2 liberations and Ce^{4+} liberation in solutions</p>
25.	CHE AC 403	Core practical I: Analytical Chemistry-Practical	2017	<p>1. Understand the common laboratory techniques including separation techniques</p> <p>2. Polarography, atomic absorption spectroscopy in both emission and absorption</p>

				<p>mode.</p> <ol style="list-style-type: none"> Gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures Familiarize with interpretation of data to structures by NMR.
26.	CHE AC 404	Project Work	2017	<ol style="list-style-type: none"> Perform experiments, collection and evaluation of data Interpretation of results while adhering to scientific principles of responsible and ethical behaviour Analysing and compiling the data and results in a chronological order in the form of dissertation. Preparation of dissertation
27.	CHE-AC-405	Applied and Environmental Aspects	2017	<ol style="list-style-type: none"> Have an idea about preparation of sampling, decomposition, separation and preconcentration of metal ions etc. Gain experience on agrochemicals and fertilizers and their analysis Have an idea on the analysis of fuels, alloys and explosives Experience with environmental pollution monitoring techniques
28.	CHE-AC-406	Bioinorganic, Bioorganic, Biophysical Chemistry	2017	<ol style="list-style-type: none"> Gain knowledge on metallo proteins in electron transfer processes. Know the applications of trace metal ions and metal ions as chelating agents in medicine. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally Understand thermodynamics of biopolymer

				reactions and to correlate free energy and biopolymer parameters
29.	CHE AC 406A	Drug Chemistry	2017	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
30.	CHE AC 406 B	Electroanalytical Techniques	2017	<ol style="list-style-type: none"> 1. Know how to interpret potentiometry and conductometry 2. Know the Interpretation of results while adhering to DC Polarography 3. Know the Analysing and compiling the data and results in polarography . 4. Familiarize Types of ion sensitive electrodes

M.Sc., Environmental Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry- I	2017	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer

				<p>Reactions</p> <p>4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.</p>
	CHE-102	Organic Chemistry I	2017	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2017	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics. 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of

				Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2017		<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations. 2. To familiarize with techniques of titration and calculation of errors
CHE-105	Organic Practical-I	2017		<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups. 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
CHE-106	Physical Practical I	2017		<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
CHE-107	General Chemistry-I	2017		<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
CHE-108	Human Values and Professional Ethics – I	2017		<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics

CHE-201	Inorganic Chemistry- II	2017	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
CHE-202	Organic Chemistry -II	2017	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
CHE-203	Physical Chemistry- II	2017	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation

				<p>and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants</p> <ol style="list-style-type: none"> To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE-204	Inorganic Practical- II	2017	<ol style="list-style-type: none"> To separate and determine the two component mixtures To acquire knowledge in the preparation of metal complexes
	CHE-205	Organic Practical-II	2017	<ol style="list-style-type: none"> To familiarize with binary mixture separation and to gain hands-on-experience in purification of the To get knowledge about the chemical behavior of different components and mechanisms.
	CHE-206	Physical Practical -II	2017	<ol style="list-style-type: none"> To study the determination of cell constant and verification of Onsagar equation, strength of strong To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
	CHE-207	General Chemistry-II	2017	<ol style="list-style-type: none"> To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and To learn general principles and classifications of chromatographic separations and applications of TLC, GLC

CHE-208	Human Values and Professional Ethics – II	2017	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
CHE-EC-301	Physical Chemistry III	2017	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
CHE-EC-302	Spectroscopy Applications	2017	<ol style="list-style-type: none"> 1. To get experience to calculate λ_{max} values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the

				<p>structure of the molecule based on the data provided</p> <p>4. To acquire knowledge about specific fragmentation rules of different molecules which are unique</p>
	CHE-EC-303	Water Analysis	2017	<p>1. To get an idea about water analysis</p> <p>2. To understand the basic principles of soil analysis</p> <p>3. To familiarize with instrumentation of potentiometric techniques</p> <p>4. To gain knowledge on flame photometry and its applications</p>
	CHE-EC-304	Instrumental Methods of Analysis-I	2017	<p>1. To get an idea about water analysis</p> <p>2. To understand the basic principles of soil analysis</p> <p>3. To familiarize with instrumentation of potentiometric techniques</p> <p>4. To gain knowledge on flame photometry and its applications</p>
	CHE-305	<p>(a) Organic Chemistry III</p> <p>(b) Inorganic Spectroscopy & Thermal Methods of Analysis</p> <p>(c) Green Chemistry</p>	2017	<p>305 A</p> <p>1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules.</p> <p>2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p> <p>3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions</p> <p>4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.</p> <p>305 B</p>

				<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
	CHE-306	(a) Spectral Techniques or (b) Chromatographic Techniques	2017	<p>306 A</p> <ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups <p>306 B</p> <ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
	CHE-EC-401	Water pollution Monitoring and Environment laws	2017	<ol style="list-style-type: none"> 1. Know about nuclear fission and fusion, uses of solar energy in space heating and water heating, hydropower and water heating, hydropower and production of ethanol from indirect solar energy.

				<ol style="list-style-type: none"> 2. Learn physical and chemical properties of water and water complexation in natural and waste water and to understand about global warming, ozone depletion, green house effect and acid rains. 3. Acquire knowledge on composition of inorganic and organic contaminants in soil, soil corrosion and industrial applications of green chemistry. 4. Get knowledge on various methods of solid waste collection and its disposal
	CHE-EC-402	Air pollution, control Methods- Noise and Thermal pollution	2017	<ol style="list-style-type: none"> 1. Acquire knowledge on disease causing agents in water 2. Learn about the removal of suspended and dissolved solids present in waste water 3. Understand different uses of micro-organisms in environmental protection 4. Know different world life acts such as forest conversion act, water control pollution act and air prevention and control act
	CHE-EC-403	Instrumental Methods of analysis- II	2017	<ol style="list-style-type: none"> 1. To know the basic principles of conductometry and analysis of acids and halides. 2. Colorometric estimation of iron and manganese. 3. To have an idea about working principles of IR, AAS, Spectrofluorimetry, Gas chromatography and HPLC. 4. To familiarize with interpretation of data
	CHE-EC-404	Project work	2017	<ol style="list-style-type: none"> 1. To identify research problem, propose the hypothesis and to collect literature. 2. To perform research designs & experiments 3. To tabulate research result. 4. To conclude research outcomes in the form of dissertation
	CHE-405	(a) Energy, Environment and Soils	2017	<p>405 A</p> <ol style="list-style-type: none"> 1. Acquire knowledge on air pollutants, air pollution sampling measurements and analysis caused due to sulphur dioxide, carbon monoxide, nitrogen dioxide,

		<p>(b) Bioinorganic, Bioorganic & Biophysical</p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>		<p>oxidants, ozone, hydro carbons and particulate matter.</p> <ol style="list-style-type: none"> Learn about different control methods and adsorption of solids and liquids, gas analysis eluents viz., nitrogen oxides, carbon monoxide and hydrocarbons. Understand pollution caused by vehicle emission, different industries, cement plants, steel mills and petroleum refineries. Know about noise and thermal power project pollutions and their effect on human health. <p>405 B</p> <ol style="list-style-type: none"> Gain knowledge on metallo proteins in electron transfer processes. Know the applications of trace metal ions and metal ions as chelating agents in medicine Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE-406	<p>(a) Drug Chemistry</p> <p>or</p> <p>(b) Electroanalytical Techniques</p>	2017	<p>406 A</p> <ol style="list-style-type: none"> Know about natural products. Know Interpretation of cardiovascular drugs. Know the Analyzing about prostaglandins. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs <p>406 B</p> <ol style="list-style-type: none"> Ability to interpret potentiometry and conductometry. Interpretation of results while adhering to DC Polarography.

				3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes.
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M.Sc., Inorganic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2017	1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
	CHE-102	Organic Chemistry I	2017	1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. 3. To know the concept of isotope effects, potential

				<p>energy diagrams and transition states in different intermediates</p> <p>4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids</p>
	CHE-103	Physical Chemistry- I	2017	<p>1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics</p> <p>2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories</p> <p>3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties.</p> <p>4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification</p>
	CHE-104	Inorganic Practical- I	2017	<p>1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations.</p> <p>2. To familiarize with techniques of titration and calculation of errors</p>
	CHE-105	Organic Practical-I	2017	<p>1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups</p> <p>2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules</p>
	CHE-106	Physical Practical I	2017	<p>1. To study the determination of critical solution</p>

				<p>temperature, eutectic composition, distribution coefficient, adsorption of different</p> <p>2. To calibrate the statistical data</p>
	CHE-107	General Chemistry-I	2017	<p>1. To know about mean and median values, standard deviation and coefficient of variation.</p> <p>2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS</p>
	CHE-108	Human Values and Professional Ethics – I	2017	<p>1. To know about the needs and importance of professional ethics.</p> <p>2. To analyze nature of Values, basic Moral Concepts character and Conduct</p> <p>3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya.</p> <p>4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics</p>
	CHE-201	Inorganic Chemistry- II	2017	<p>1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes</p> <p>2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams.</p> <p>3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods.</p> <p>4. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods.</p>
	CHE-202	Organic Chemistry -II	2017	<p>1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping</p>

				<p>and crossover experiments.</p> <ol style="list-style-type: none"> 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents
	CHE-203	Physical Chemistry- II	2017	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems. 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE-204	Inorganic Practical- II	2017	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes
	CHE-205	Organic Practical-II	2017	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the

				2. To get knowledge about the chemical behavior of different components and mechanisms
	CHE-206	Physical Practical -II	2017	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsagar equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry
	CHE-207	General Chemistry-II	2017	<ol style="list-style-type: none"> 5. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 6. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2017	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-IC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2017	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR.

				4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
	CHE-IC-302	Organic Spectroscopy and Applications	2017	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-IC-303 and CHE-IC-304	Core practical I & II Inorganic Chemistry	2017	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To familiarize with the analysis of organometallic complex salts. 3. To Understand the complexity, theory and working principle of colourimetry. 4. To gain knowledge on analysis of organic components
	CHE-305A	Organic Chemistry III	2017	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents

				<ol style="list-style-type: none"> 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds
	CHE-305B	Physical Chemistry III	2017	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2V} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE IC 306 A	Spectral Techniques	2017	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE IC 306 B	Chromatographic Techniques	2017	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different

				<p>chromatographic methods</p> <ol style="list-style-type: none"> 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase
	CHE-IC-401	Coordination compounds, Organo metallic chemistry & Chemistry of non-transition elements	2017	<ol style="list-style-type: none"> 1. To Gain an extensive knowledge about dinitrogen complexes of Ru(II), Os(II), Co(I), Mo(0) and dioxygen complexes of Ir(I) and Rh(I) and on cycloheptatriene and tropylium complexes of oxidative, reductive elimination reactions 2. To understand mechanism, stereochemical aspects and regeneration of catalyst in olefin hydrogenation (Wilkinson's catalyst), olefin oxygenation (Wacker process or Smidt reaction), Olefin hydroformylation and Fischer –Tropsch process. 3. To study the examples of metal complexes having metal-metal single or multiple bonds and analyse the spectroscopic evidences for the presence of metal-metal bond. 4. To understand the synthesis and structures of boranes, carboranes, borazines, silicates carbides, peroxy compounds and inter halogens, pseudohalides
	CHE-IC-402	Instrumental Methods of Analysis	2017	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).

				<ol style="list-style-type: none"> 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis. 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I- and S²⁻) by using I₂ liberations and Ce⁴⁺ liberation in solutions
	CHE-IC-403	Instrumental Methods of Analysis-II	2017	<ol style="list-style-type: none"> 1. To understand the common laboratory techniques including separation techniques. 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. To gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures. 4. To Familiarize with interpretation of data to structures by NMR.
	CHE-IC-404	Project work	2017	<ol style="list-style-type: none"> 1. Ability to perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour. 3. Analysing and compiling the data and results in a chronological order in the form of dissertation 4. Preparation of dissertation.
	CHE-405	(a) Solid state and Photo Chemistry (b) Bioinorganic, Bioorganic & Biophysical (c) Chemistry of	2017	405 A <ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF).

		Nanomaterials & Functional materials		<p>2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).</p> <p>3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis</p> <p>4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions.</p> <p>405 B</p> <p>1. Gain knowledge on metallo proteins in electron transfer processes.</p> <p>2. Know the applications of trace metal ions and metal ions as chelating agents in medicine.</p> <p>3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.</p> <p>4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters</p>
	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2017	<p>406 A</p> <p>1. Know about natural products.</p> <p>2. Know Interpretation of cardiovascular drugs.</p> <p>3. Know the Analyzing about prostaglandins.</p> <p>4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.</p>

				<p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes
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M.Sc., Organic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2017	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule
	CHE-102	Organic Chemistry I	2017	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of

				<p>substituents</p> <ol style="list-style-type: none"> 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2017	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
	CHE-104	Inorganic Practical- I	2017	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
	CHE-105	Organic Practical-I	2017	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with

				methodologies to prepare biologically important molecules
	CHE-106	Physical Practical I	2017	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
	CHE-107	General Chemistry-I	2017	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
	CHE-108	Human Values and Professional Ethics – I	2017	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
	CHE-201	Inorganic Chemistry- II	2017	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions

	CHE-202	Organic Chemistry -II	2017	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
	CHE-203	Physical Chemistry- II	2017	<ol style="list-style-type: none"> 5. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 6. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants 7. To identify Relation between order of a finite group and its subgroup, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 8. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE-204	Inorganic Practical- II	2017	<ol style="list-style-type: none"> 3. To separate and determine the two component mixtures 4. To acquire knowledge in the preparation of metal complexes
	CHE-205	Organic Practical-II	2017	<ol style="list-style-type: none"> 3. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 4. To get knowledge about the chemical behavior of different components and mechanisms.

	CHE-206	Physical Practical -II	2017	<ol style="list-style-type: none"> 3. To study the determination of cell constant and verification of Onsagar equation, strength of strong 4. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
	CHE-207	General Chemistry-II	2017	<ol style="list-style-type: none"> 3. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 4. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2017	<ol style="list-style-type: none"> 5. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 6. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 7. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 8. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-OC-301	Organic Chemistry III	2017	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds

	CHE-OC-302	Organic Spectroscopy and Applications	2017	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE OC 303 & 304	Core practical I: Organic Estimations - Practical	2017	<ol style="list-style-type: none"> 1. To gain knowledge about the estimation/percent purity of different organic molecules. 2. To get hands-on-experience with the synthesis and determination of concentrations and purity 3. To acquire knowledge in handling of toxic chemicals in multi step preparation of biologically important 4. To gain experience in the proposal of synthetic routes to functionalized derivatives
	CHE-OC-305 A	Inorganic Spectroscopy and Thermal Methods of Analysis	2017	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To gain knowledge on chemistry of alloys. 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations.
	CHE-OC-305 B	Physical Chemistry III	2017	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2V} point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. 4. To study the concepts on heat of dissolution, regular solution

				theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE OC 306 (A)	Spectral Techniques	2017	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE OC 306 (B)	Chromatographic Techniques	2017	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase.
	CHE-OC- 401	Organic synthesis I	2017	<ol style="list-style-type: none"> 1. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents 2. Learn about photolytic reactions of carbonyl compounds, conjugated carbonyl derivatives, olefins, conjugated dienes CO₃:To gain knowledge in the determination of allowed or forbidden of chemical reactions <i>viz.</i>, cycloaddition and 3. Learn the methods of preparation, properties, and industrial applications of various addition and condensation 4. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents
	CHE-OC 402	Organic Synthesis II	2017	<ol style="list-style-type: none"> 1. Familiarize with functionalization and interconversion of functional groups and the concept of organic synthesis by retrosynthetic approach 2. Gain knowledge in the formulation of synthetic routes for naturally occurring drugs. 3. Understand quinoline, acridine and guanidine group of

				alkaloids as antimalarials and to familiarize with the role of functioning of broad spectrum antibiotics. 4. Acquire knowledge about the classification, properties, structure & conformation and biological functions of peptides/proteins
	CHE OC 403	Core practical I: Spectral Identification of Organic Compounds	2017	1. Calculate λ max values. 2. Ascertain functional groups. 3. Interpret the spectral data to the structure and stereochemistry of the molecules. 4. Analyse the fragmentation pattern of the molecules.
	CHE OC 404	Practical II: Project Work	2017	1. Identify the problem, to collect the literature and understanding parameters to design the problem. 2. Perform experiments to synthesize the molecules with desired stereochemistry adopting modern techniques 3. Collect and interpretation of the data to the structures 4. Presentation of the data in the form of dissertation
	CHE-OC- 405A	Heterocycles and Natural Products	2017	1. Familiarize with the synthetic routes of five membered heterocycles with two heteroatoms and to justify the site of 2. Acquire knowledge on the synthetic methodologies of benzofused and six membered heterocycles and the effect of 3. Familiarize with the structural elucidation and synthesis of naturally occurring steroids and hormones 4. Know about isolation, structural determination and synthesis of flavonoids and isoflavonoids
	CHE-OC- 405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2017	1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.

				4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE 406A	OC Drug Chemistry	2017	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
	CHE 406B	OC Electroanalytical Techniques	2017	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Physical Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHE-101	INORGANIC CHEISTRY I	2017	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions.

				4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2	CHE-102	Organic Chemistry I		<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3	CHE 104	Core practical I: Inorganic Chemistry		<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
4	CHE 105	Core practical I: Organic Chemistry		<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules

5	CHE 106	Core practical I: Physical Chemistry		<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
6	CHE-107	General Chemistry I		<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
7	CHE 108	Human Values and Professional Ethics-I		<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavad Gita, various – 5. /*religions, religious tolerance, Gandhian ethic--
	CHE - 201	Inorganic Chemistry II	2017	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russell-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hund's, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Faraday methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions

	CHE-202	Organic Chemistry II	2017	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents
	CHE -203	Physical chemistry II	2017	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system

CHE 204	Core practical I: Inorganic Chemistry	2017	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes 	
CHE 205	Core practical II: Organic Chemistry	2017	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms 	
CHE 206	Core practical II: Physical Chemistry	2017	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry 	
CHE-207	General Chemistry II	2017	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC 	
CHE 208	Human Values and professional ethics-II	2017	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management 4. To familiarize environmental ethics, ethical 	

				theory and ecological crisis
	CHE-PC-301	Physical Chemistry III	2017	<ol style="list-style-type: none"> 1. To know the determination of Character Coordinate of C_{2V} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational-rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE-PC 302	Organic Spectroscopy and Applications	2017	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds. 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE PC 303 & 304	Core practical I: Physical Chemistry-practicals I & II	2017	<ol style="list-style-type: none"> 1. To study chemical kinetics of homogeneous solutions 2. To gain knowledge on the determination of different cations by flame photometry 3. To understand the principle and working aspects of

				<p>conductometric titrations</p> <ol style="list-style-type: none"> 4. To acquire knowledge on the implementation of colorimetric estimations 5. To study chemical kinetics of homogeneous solutions
	CHE PC 305 A	Organic Chemistry III	2017	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
	CHE-PC- 305 B	Inorganic Spectroscopy and Thermal Methods of Analysis	2017	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR 3. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron

CHE PC 306 A	Spectral Techniques	2017	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
CHE PC 306 B	Chromatographic Techniques	2017	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
CHE-PC- 401	Electrochemistry	2017	<ol style="list-style-type: none"> 1. Know the techniques of deposition of metals, throwing power simultaneous discharge of cations and methods of corrosion protection 2. Learn about electrochemical Batteries, fuel cells and nickel-cadmium batteries 3. Understand electrical double layer systems, sedimentation potential, null points of metals and zeta potential 4. Calculate electrochemical parameters; familiarize mixed ligand systems and reversible systems
CHE-PC 402	Thermodynamics, Polymers and Solid-state Chemistry	2017	<ol style="list-style-type: none"> 1. Derive Gibbs Duhem equation and to calculate fugacity and chemical potential 2. Calculate excess free energy and entropy, to draw Hildebrand curves and to correlate excess functions and activity coefficients

				<ol style="list-style-type: none"> 3. Learn morphology, T_m and T_g points and to calculate transition temperatures and to identify cross linking in polymers 4. Identify magnetic properties of solids, magnetic materials, superconductors and BCS theory
	CHE PC 403	Core practical I: Inorganic Chemistry - Practical	2017	<ol style="list-style-type: none"> 1. To perform titration of mixture of halides and to draw potentiometry curves 2. To learn amperometric titrations and mixtures by polarography 3. To Correlation of data obtained from IR, AAS, HPLC and GC 4. To Determination of alkalinity and purity by pH metry
	CHE PC 404	Project Work	2017	<ol style="list-style-type: none"> 1. To identify research problems and to collect research literature 2. To propose hypothesis of a research problem 3. To perform research experiments 4. To analyse the data and conclude the research outcomes
	CHE-PC-405A	Chemical Kinetics	2017	<ol style="list-style-type: none"> 1. Draw skrabal pH diagram and to separate unimolecular and bimolecular reactions 2. Study laws of photochemistry, to derive stern-volmer equation 3. Identify chromo potentiometry points and to investigate kinetic currents and isotopic effects 4. Learn photochemical thresholds, chemiluminescence
	CHE-PC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2017	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes

				<ol style="list-style-type: none"> 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE 406A	PC Drug Chemistry	2017	<ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs 3. Analyzing about prostaglandins. Know the 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs
	CHE PC 406 B	Electroanalytical Techniques	2017	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

33. Environmental Sciences

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ENV-101	Ecology and Environment	2017	<ul style="list-style-type: none"> • To impart the knowledge on ecology and structure and

				<p>functions of ecosystems.</p> <ul style="list-style-type: none"> • To inculcate ethics and learning in ecosystem imbalance, health and environment. • To analyze soil profile and its importance of ecological balance. • To estimate the nutrients in the different soil samples. • Provide solutions to environmental problems using appropriate tools and techniques. • Develop both a quantitative and qualitative understanding of interactions between organisms and their consequences. • Gain the knowledge of functions of organisms and ecosystem. • Describe programmes environmental protection by implementing eco-friendly for human existence.
2	ENV -102	Environmental Chemistry	2017	<ul style="list-style-type: none"> • To understand emissions and distribution of the air pollutants and particles in the atmosphere. • To identify chemical properties and reactions of the compounds in the air. • To understand the primary and secondary pollutants and its effects. • To inculcate non polluted environment using green

				<p>chemistry.</p> <ul style="list-style-type: none"> • Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water and soil. • Apply basic chemical concepts to analyze chemical processes involved in different environmental problems. • By knowing pollution levels in the environment best possible fresh environment can be created in different methods like afforestation, natural parks and sanctuaries etc., for human concern. • Acquire the knowledge to implementation of biological alternatives for protection of the environment.
3	ENV-103P	Practical – I	2017	<ul style="list-style-type: none"> • To estimate population of flora and fauna in the ecosystem. • To examine nutrients levels in various samples of wastewater. • To estimate the protein, carbohydrates and nucleic acid in the different species. • To examine the natural condition for species survival. • Imparting practical knowledge about estimation of

				<p>pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples.</p> <ul style="list-style-type: none"> • Imparting practical knowledge about estimation of pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples. • Understand the environmental changes due to pollution levels. • Examine the various ecosystems and its biodiversity.
4	ENV-104P	Practical-II	2017	<ul style="list-style-type: none"> • To examine the contamination of the environment with chemical load by spectroscopic technology. • To analyze the concentration of the metals in the environment. • To inculcate the knowledge in scientific instrumentation. • To understand applications of organic matter in soils. • Understanding of various alkalinities present in the water sample by volumetric titration linked with theory. • By knowing water pollution potable water can be drawn out and wastewater can be treated. • By knowing various experiments of minerals fertility of the soil can be known which is advantage

				<p>to farmers for agriculture.</p> <ul style="list-style-type: none"> • Describe the advantages of organic farming.
5	ENV-105	Environmental Toxicology and Public Health	2017	<ul style="list-style-type: none"> • To introduce the applications of environmental toxicology in the context of public health. • To focus on the fate of chemicals in our environment and routes of exposure. • To understand the epidemic diseases and control methods. • To impart the knowledge in understanding of biotechnology for degradation of waste products in the environment. • Understand the role of toxicants in environment and methods used to quantify toxicity. • Inform, educate, and empower people about the potential hazards of toxic substances to environmental and human health. • By knowing the adverse health problems on human beings, safety, preventing measures can be implemented endemic and pandemic diseased can be controlled. • Understand the toxicity of pesticide, detoxification metals on public health.

6.	ENV-106	Human Values and Professional Ethics-I	2017	<ul style="list-style-type: none"> • To inculcate the knowledge on professional and ethical values. • To understand classification of moral and ethical values in traditional texts. • To describe enlightenment and social behavior towards the various religious and society. • To create social values and professional ethics. • Describe the human values, understand the commitment and responsibility. • They gain the ability to bring harmony to the society. • By studying human values reformation of man and reformation of policy shall be done and harmony of environment and society also can be achieved. • Moral code of conduct and social behavior towards religion and social harmony.
7.	EN-201	Energy and Environment	2017	<ul style="list-style-type: none"> • To understand energy concepts for conventional and renewable energy technologies and their application. • To provide energy production methods and consequent environmental impacts. • To understand sources of various green energy and

				<p>applications.</p> <ul style="list-style-type: none"> • To inculcate the bio-energy practices for maintain environmental quality. • Explain the key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences. • They explain basic competence regarding environmental impacts arising from different energy carriers and technical solutions. • Enrichment of ecosystem will be achieved. • Explain energy planning for future generations.
8.	ENV-202	Environmental Pollution	2017	<ul style="list-style-type: none"> • To understand route way of pollutants and their impacts on the environment. • To impart the knowledge on diseases caused by pollution. • To understand classification of pollution, predictions and consequences of society. • To understand safe disposal of radioactive wastes. • Analyze sources of pollution, exposure pathways, fate and evaluate consequences of human exposure to pollution and its impacts to environmental quality.

				<ul style="list-style-type: none"> • Distinguish the effect of pollutants on human health, economy and wild environments. • Pollution free environment for human life will be achieved. • Explain the contamination of water bodies due to discharge of untreated wastewater into the drain.
9.	ENV-203P	Practical-I	2017	<ul style="list-style-type: none"> • To analyze wastewater and pond water samples. • To estimate the concentration of various metals in environment. • To analysis of toxicants in environmental samples. • To understand bioaccumulation of pesticides. • Describe the amount of pesticide/insecticide in water/vegetable samples. • Report the values of analyzed inferences of the experiments. • Assess the concentrations of pollutants. • Explain the formation of photochemicals.
10.	ENV-204P	Practical-II	2017	<ul style="list-style-type: none"> • To understand the difference of LC₅₀ and LD₅₀. • To evaluate the samples like water, soil and biological. • To examine the growth rate of fauna in different

				<p>habitats.</p> <ul style="list-style-type: none"> • To assess micro and macro nutrients in the soil samples. • Identify the concentration of biochemical by using instrumental methods. • Applications of scientific methods for analysis of pollution. • Applications of basic scientific principle in the evaluation of pollution by instruments.
11	ENV-205	Instrumental Techniques and Applications	2017	<ul style="list-style-type: none"> • To impart the knowledge in instrumental techniques. • To understand in the operation and care of instruments used in the chemical laboratories. • To inculcate chromatographics in plant pigments. • To understand value of nanotechnology. • Integrate a fundamental understanding of the underlining physics principles as they relate to specific instrumentation used for atomic, molecular, and mass spectrometry, magnetic resonance spectrometry and chromatography. • Environmental potentiality will be achieved. This is indirect benefits to the society. • Understand the analysis and level of concentration of

				<p>different metals through instrumental techniques.</p> <ul style="list-style-type: none"> • Explain Nanotechnology and Nano Engineering and Nano Science.
12	ENV-206	Human Values and Professional Ethics-II	2017	<ul style="list-style-type: none"> • To create an awareness on professional ethics and Human Values. • To appreciate the rights of others. • To understand environmental ethics. • To create an awareness on social ethics. • Understand the core values that shape the ethical behaviour. • An ability to apply their broad education towards the understanding of the impact of engineering solutions in a global and societal context. • Making the students to full man, understanding the ethical values. • Ability to achieve ethics in medical, business, environment and social.
13	ENV -301	Waste Treatment and Management	2017	<ul style="list-style-type: none"> • To understand purification practices for wastewater. • To emphasize on design considerations of various unit operations and processes of water treatment

				<p>facilities.</p> <ul style="list-style-type: none"> • To characterize the waste and apply the knowledge of laws for handling of various wastes and management. • To understand the reduction of environmental pollution by recycling the waste products. • Describe the components of solid waste management and the laws governing it. • Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes. • Biodegradation of waste through natural and artificial methods will be achieved. • Evaluating solid waste management practices in urban and rural environment. • Explain minimize and reduce waste generation through applications of 3 R's policy.
14	ENV -302	Environmental Assessment, Audit and Economics	2017	<ul style="list-style-type: none"> • To introduce and provide theoretical and practical education on environmental impact assessment. • To assess the economic burden of environmental cause. • To focus on the rationale and methodology of

				<p>integrated environmental impact assessment (EIA) including consideration of the relevant bio-physical, social, cultural, economic and human health aspects of development proposals, programs and policies.</p> <ul style="list-style-type: none"> • To understand financial impact of environmental policy. • Explain the concepts about the Environmental Impact Assessment (EIA) and describe the environment laws, aims and the necessity of EIA. • Critically examine assumptions inherent in impact assessment, examine a range of environmental impact assessments and identify and explore impact assessment fields and approaches. • Understand the sustainable development and controlling environmental pollution. • Describe the environmental economics for sustainable development.
15	ENV -303	Practical-I	2017	<ul style="list-style-type: none"> • To prepare EIA for project management and environmental statement for industries. • To estimate the presence of sedimentary particles by scientific methods. • To analyze environmental impact for will being of

				<p>the society.</p> <ul style="list-style-type: none"> • Understand the degradation of natural resources by constructions of various projects. • Understand requirement of oxygen for growth of organisms to break down organic matter in wastewaters. • Describe the low cost wastewater treatment practices in water demand areas.
16	ENV-304	Practical-II	2017	<ul style="list-style-type: none"> • To construct practical statistical models for several processes in the real-world. • To understand coefficient of two variable in samples. • To understand the basic operations of a computer system. • It helps to explain the relationships between variables of the real-world applications. • Analyze evaluation of two variables. • Develop the programming techniques and the problem solving skills through programming.
17	ENV-305A	Disaster Mitigation and Management	2017	<ul style="list-style-type: none"> • To obtain, analyze and communicate information on risks and relief needs. • To assess review and control the risk. • To develop methods of risks analysis and evaluation

				<p>of accidents in industrial development.</p> <ul style="list-style-type: none"> • To inculcate economic evaluation of risks after the disaster. • Understand the mitigation approaches, their choices and alternatives. • Develop foundations for hazard, risk and vulnerability assessment. • Explain the knowledge on disaster preparedness to meet risks in natural disasters. • Know about the economic evaluation of risks and frame work for sustainable development.
18	ENV-305B	Biodiversity Conservation and Management	2017	<ul style="list-style-type: none"> • To assess biodiversity loss and the importance of biodiversity conservation. • To emphasis regional diversity hotspots and important conservation areas. • To develop biotechnological methods in pollution abatement and develop eco-friendly bio-products for environmental health. • To acquire knowledge in environmental management through biological system. • Systematically understand biodiversity and its vital role in ecosystem function.

				<ul style="list-style-type: none"> • Understand the value of biodiversity and current threats to biodiversity. • Describe Environment of nature. • Explain the conservation of the environment by adopting bio treatment for waste degradation.
19	ENV-305C	Statistics, Computer Applications and Modeling	2017	<ul style="list-style-type: none"> • To assess the strengths of the conclusions and evaluating their uncertainty in the data. • To understand importance of computer applications in business, education and research. • To develop appropriate mathematical models to predict environmental changes. • To understand mathematical tools used in modeling. • Analyze data using standard statistical techniques. • Utilize the Internet Web resources and evaluate on-line e-business system. • Environmental analysis, forecasting of the environment can be achieved. • Evaluate test significant for ecological predictions.
20	ENV-306A	Natural Resources Conservation	2017	<ul style="list-style-type: none"> • To introduce the importance of natural resources and its management. • To integrate technical field knowledge with analytical skills to solve important natural resource

				<p>management problems.</p> <ul style="list-style-type: none"> • To understand different practices of agriculture and its impact on environment and food stock. • To understand use and exploitation of mineral and food resources daily life. • Application of theories and methods with interdisciplinary approach towards natural resource management. • Critically examining the gap in the resource availability, use and conservation. • Environment conservation and employment generation. • Describe sustainable agriculture management.
21	ENV-306B	Environmental Education and Sustainability	2017	<ul style="list-style-type: none"> • To identify the interconnected and interdisciplinary nature of environmental studies. • To expand the knowledge of liberal arts for understanding the relationship between humans and their environment. • To analyze environmental priorities and develop appropriate strategies for programme implementation. • To understand environmental education and

				<p>awareness for sustainable development.</p> <ul style="list-style-type: none"> • Demonstrating an integrative approach to environmental issues with a focus on sustainability. • Communicating complex environmental information to both technical and non-technical audiences. • Enriches the students with knowledge of environmental problems and appropriate solutions to overcome them. • Describe the eco-friendly techniques to meet future challenges.
22	ENV-401	Water Resources and Watershed Management	2017	<ul style="list-style-type: none"> • To develop an understanding of the occurrence and availability of freshwater, its uses, and problems related to water resources management. • To learn more about managing our water resources and solve societal and environmental woes. • To understand traditional water conservation methods and equitable use of water for sustainable development. • To develop more rainwater conservation practices for future generations. • Understand water's importance as a precious resource.

				<ul style="list-style-type: none"> • Provide a basic understanding of the impact of water and water-related issues in a global, economic, environmental and societal context. • Describe the management of water resources through construction of watersheds for future generations. • Understand value and role of the water resources for sustainable growth and development.
23	ENV-402	Remote Sensing and GIS	2017	<ul style="list-style-type: none"> • To provide background knowledge and understanding of principles of RS and RS systems. • To enhance capacity to interpret images and extract information on the earth surface from multi-resolution imagery at multi-scale level. • To analyze satellite data in understanding forest, water resources, agricultural and soil coverage. • To find the degradation level of environmental parameters through remote sensing applications. • Laying foundations for understanding Remote Sensing and Geographic Information System as a powerful tool for geospatial analysis. • Evaluating the application of RS-GIS techniques to the matrices of environment and resource management.

				<ul style="list-style-type: none"> • Future predictions of the environment will be known about weather. • Explain the damages occurred in the environment by GIS.
24	ENV-403	Practical-I	2017	<ul style="list-style-type: none"> • To estimate the various metals by using instrumental techniques. • To understand the coverage of watershed development from aerial photos. • To recognize geomorphological characters from aerial survey. • Analyze the multi elements in various wastewater samples. • Understand the quality of ground water. • Describe extend of drainage area with its hazardous characters.
25	ENV-404	Project Work and Comprehensive Viva-Voce	2017	<ul style="list-style-type: none"> • To understand the concepts of project management for better execution of projects. • To identify the different funding agencies for environmental protection. • To develop valuable social networking which increases public participation in environmental management.

				<ul style="list-style-type: none"> • Understanding project characteristics at its various stages of implementation. • Estimating the cost of physical and human resources and making plans to obtain the necessary resources. • Developing young researchers with appropriate exposure and necessary training.
26	ENV-405 A	Ecotourism and Eco-restoration	2017	<ul style="list-style-type: none"> • To impart the knowledge in understanding the concepts of eco-tourism. • To describe about the Eco-tourism and wildlife tourism in protected areas, planning and economics. • To understand major sources of environmental degradation and its consequences on biodiversity. • To understand soil fertility by adopting eco-restoration. • Describe the challenging in eco-tourism and wildlife tourism. • Understand values of wildlife and minimizing impact on natural ecosystem due to tourism. • Rest and recreation to the public and income generation for the Government. • Eco solutions will be achieved.
27	ENV-405 B	Environmental Laws, Policies and	2017	<ul style="list-style-type: none"> • To prevent, minimize, remedy and punish actions

		Legislation		<p>that threaten or damage the environment.</p> <ul style="list-style-type: none"> • To preserve and protect the nature's gifts from pollution by implementation of environmental laws and policies. • To understand environmental public policy strategies in pollution control. • To understand environmental laws and acts for protect and conservation of environment. • Understanding judicial response to environmental issues in India. • Acquiring the ability to evaluate the role of law and policy in conservation and management of natural resources and prevention of pollution. • It enhances the societies support for environment's protection programmes. • Develop the environmental quality through implementation of environmental laws and acts.
28	ENV-405 C	Environmental Management and Sustainable Development	2017	<ul style="list-style-type: none"> • To develop skill in management of environment in a global level. • To understand the environmental knowledge into action in order to achieve particular outcomes in the way landscapes, societies and/or natural ecosystems

				<p>are used and managed.</p> <ul style="list-style-type: none"> • To provide skills and an improved understanding of how firms and organisations work with sustainability issues. • To understand sustainable environmental management by implementing policy principles. • Explain the environmental management practices. • Ability to analyze environmental management in relation to the major principles of sustainable development. • The ability to work effectively to create environmental management analysis outputs of professional quality, both independently and within team environments. • Develop innovation strategies for sustainable development at local and national level.
29	ENV-406 A	Forest Resources and Management	2017	<ul style="list-style-type: none"> • To provide desired physical, chemical and biological soil processes and functions on the Forests to maintain and/or improve soil productivity. • To create basic strategies for forest management like plantation forestry, natural forest management and agroforestry.

				<ul style="list-style-type: none"> • To build synergy with national and international agencies on environmental conservation. • To awareness of the disadvantages of deforestation and further conservation. • Demonstrating knowledge of forest vegetation modeling to forecast its development over time. • Integrating knowledge of basic biology, physical and social sciences, forest and wildlife ecology. • Through forest management national economy will be improved. • Describe preparation and development of action plan for conservation of forests.
30	ENV-406 B	Global Environmental Issues	2017	<ul style="list-style-type: none"> • To promote an investigation of the scientific principles behind global environmental issues. • To develop a world which is eco-friendly and pro for sustainable development. • To develop new dimensions to environment – human relationships. • To develop non polluting energy resources. • Predicting the consequences of human actions on quality of human life and global economy. • Developing critical thinking for shaping strategies

				<p>for environmental protection and its conservation.</p> <ul style="list-style-type: none"> • Updating the global environmental laws binding on the Governments. • Establish awareness on environment to meet future challenges.
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34. Fishery Sciences & Aquaculture

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	AQC 101	Concepts of Aquatic Ecology	2017	<p>i. Understanding the General Characteristics, Principles of classification, Aquatic EcologyCommunities.</p> <p>ii. To understand the various Physical and chemical characteristics of water.</p>
2	AQC 102	Systematics And External Anatomy of Cultivable Organisms	2017	<p>i. Understand the concepts of finfish and shellfish systematics and anatomy.</p> <p>ii..</p>

				<p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	AQC 103 A	Fish Nutrition and Water Quality Management	2017	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how</p>

				to solve genetic problems, pedigree analysis.
4	AQC: 103 B	Environmental Monitoring and Bio deterioration	2017	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental</p>

				characters.
5	AQC- 104A	Coastal Aquaculture	2017	<p>i. The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	AQC 104 B	: Ornamental Fish Culture	2017	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and</p>

				<p>Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	Practical-1 AQC 105	Identification and Morphology of Cultivable Organisms	2017	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the</p>

				<p>structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	Practical-2 AQC106	Fish Nutrition	2017	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and</p>

				techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.
9.	AQC 107	Human Values and Professional Ethics – I	2017	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>

10.	AQC 201	Principles of Aquaculture	2017	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	AQC 202	Physiology of Cultivable Organisms	2017	<p>i. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p> <p>ii. The students will be able to explore an original query in Animal Physiology. The</p>

				<p>students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>iii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	AQC 203A	Fresh Water Aquaculture	2017	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be</p>

				performed by Humans to lead a good and Peaceful life.
13	AQC 203B	Capture fisheries	2017	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	AQC 204 A	Fishery Economics, Extension and Environmental Management	2017	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics</p>

				<p>and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	AQC 204 B	Limnology	2017	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p>

				<p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	Practical-1 AQC205	Soil and Water Characteristics	2017	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p>

				<ul style="list-style-type: none"> iii. Students learn about enzymes. Their classification and nomenclature iv. Students learn about specificity of enzymes v. Students learn about measurement of enzymatic activity vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.
17	Practical-2 AQC206	Physiology of Fin Fish and Shell Fish	2017	<ul style="list-style-type: none"> i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances. ii. Identify and describe the different equipment and tools used in a biology laboratory. iii. Correctly operate different laboratory instruments. iv. Correctly operate different types of microscopes. v. Prepare tissue for section cutting and correctly operate a microtome.
18	AQC 206	Human Values and Professional Ethics – II (Audit course)	2017	<ul style="list-style-type: none"> i. Students gain knowledge about regulation of enzyme activity with respective mechanisms ii. To understand about mechanism of enzymes

				<p>in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	AQC 301	Microbiology and Fish Pathology	2017	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean,</p>

				<p>Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	AQC 302	Fish Immunology	2017	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	AQC: 303A	Cell Biology and Genetics	2017	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and</p>

				<p>biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
22	AQC 303 B	Bioinformatics In Aquaculture	2017	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
23	Practical's AQC 304	Microbiology and Fish Diseases	2017	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p>

				<p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	Skill oriented course AQC 305	Fish Nutrition Technology	2017	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
25	Open	a)AQC 306A: Fish Processing	2017	<p>i. Learnt about structure, function and</p>

	Elective (For other department students)	Technology b) AQC306B: Pollution and Toxicology		<p>organization of Neurons in the Central nervous system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effective communicate with both specialist and non-specialist audiences/community.</p>
26	AQC 401	Aquaculture Biotechnology	2017	<p>i. Skill development in environmental and occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p>

				<p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
27	AQC402	Essentials Of Biochemistry	2017	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT</p>

				<p>products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
28	AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2017	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types</p>

	AQC403B	Aquaculture Engineering		<p>of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
29	Practical's AQC 404	Biotechnology And Biochemical Estimations	2017	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	Multidisciplinary course/ project work AQC405	Project Work / Fieldwork	2017	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic</p>

				<p>engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
31	Open Elective (For other department students) AQC 406(A)	General Principles and Practices of Aquaculture	2017	<p>i. Understand the evolution of protein structural motifs and domains and associate this with function;</p> <p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
32	AQC 406 (B)	Fish Breeding and Hatchery Management	2017	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control</p>

				<p>infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>
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35. Geography

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEG-101	Geomorphology	2017	<ul style="list-style-type: none"> To understand the concept of place and how it is connected to people's sense of belonging to the physical environment, landscape and culture. To understand the fundamental concepts of spatial interaction and

				<p>diffusion, which explain how human activities are influenced by the concept of distance.</p> <ul style="list-style-type: none"> • Toexposedtothenatureofphysicalsystemssuchasgeomorphologicprocessesandnaturalhazards. • Toreadandinterpretinformationondifferenttypesofphysicalfeaturesmaps. • Tolearnhowhuman,physicalandenvironmentalcomponentsoftheworldinteract.
2	GEG-102	Economic Resource Studies	2017	<ul style="list-style-type: none"> • To acquire knowledge about the concepts of resources, classification, models of natural resource processes, their use and misuse, conservation and management of resources for sustainable development • To Provide a comprehensive introduction to basic concepts and key theoretical approaches in economic geography • To Introduce economic geography as a dynamic, diverse and contested body of knowledge • To enable you to apply this knowledge to key social and economic issues in the context of economic globalization
3	GEG-103P	Maps Scales and Map Projections	2017	<ul style="list-style-type: none"> • Toapprisethestudentsabouttheartandscienceofmapmakingandrepresentation. • Toexplainstheusageofdifferenttypesofprojections • Tofocusontheimportanceofscaleandprojectionintheprocessofrepresent

				ingtheearthsurface
4	GEG-104P	Terrain Mapping Techniques	2017	<ul style="list-style-type: none"> To apprise the students about the Terrain mapping techniques To project the representation of the landforms by using contour lines To explain the methods of slope analysis To develop the knowledge on the thematic maps To Understand the data representation through the diagrammatic form and logographs
5	GEG-105	Advanced Cartography	2017	<ul style="list-style-type: none"> To apprise the students to various aspects of cartography. To introduce the basic concepts and key theoretical approaches in Advanced Cartography. <p>To describe the art and science of map making and map analysis</p>
6.	GEG-106	Human Values and Professional Ethics-I	2017	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society</p>
7.	GEG-201	Climatology and Oceanography	2017	<ul style="list-style-type: none"> To introduce to the students the fundamentals of atmospheric phenomena, global climate systems and climate change.

				<ul style="list-style-type: none"> • The atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change. • To grasp the techniques for modeling the climate, covering both theoretical and technical aspects. • To understand the dynamics of the atmosphere and the overall climatological system. • To be able to analyse and interpret climatic data and classification of climate
8.	GEG-202	Principles of Remote Sensing	2017	<ul style="list-style-type: none"> • To focus on history and evolution of Remote sensing. • To explain the principle involved in remote sensing i.e. the Electromagnetic spectrum, reflection, refraction, diffusion, absorption and interaction with the earth's atmosphere. • To give the technical knowledge of satellite system. • To provide knowledge on the platforms and instruments used for remote sensing. • To give light on Aerial Remote sensing and satellite Remote sensing. <p>To explain about the specifications of sensors</p>
9.	GEG-203P	Interpretation of topographical and Weather Maps	2017	<ul style="list-style-type: none"> • To provide understanding and interpretation skills of different Topographical maps. • To improve the knowledge on Indian weather maps and Interpretation skills.

10	GEG-204P	Techniques of Mapping and Map Analysis	2017	<ul style="list-style-type: none"> • To apprise the students about the Terrain mapping techniques • To project the representation of the landforms by using contour lines • To explain the methods of slope analysis • To develop the knowledge on the thematic maps
11	GEG-205	Geographical Thought	2017	<ul style="list-style-type: none"> • To acquaint the students with the Geographical philosophy and the Methodology and historical development of geography as a professional field. • The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production. • To developing critical thinking and analytical approaches and Students will acquire an understanding of and appreciation for the contributions of the eminent geographers to the subject.
12	GEG-206	Human Values and Professional Ethics-II	2017	<p>Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	GEG-301	Urban Studies	2017	<ul style="list-style-type: none"> • To deal with the concept of urban settlements and evolution

				<p>ion of urban population and to provide concept of Urban studies.</p> <ul style="list-style-type: none"> • To explain the cause and effect of growth in urban population. • To explain the theories involved in classification of towns and relationship between towns and cities and their population. • To understand patterns of World urbanization with reference to India
14	GEG-302	Geographical Information System (G.I.S)	2017	<ul style="list-style-type: none"> • To understand the evolution of GIS. • To focus on collection, analyzing, interpretation and presenting the data related to Earth. • To explain the types of data collection with respect to time and terrain and Database management and retrieving the data from different sources. • To provide the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS. • To provide knowledge on GIS applications in different sectors.
15	GEG-303P	Geographical Information System (G.I.S)	2017	<ul style="list-style-type: none"> • To acquaint knowledge about especially Geographic Information System (GIS) softwares. • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage.

				<ul style="list-style-type: none"> To develop the skill on analysis methods of GIS.
16	GEG-304P	Statistical Techniques	2017	To analyze and represent the geographical data
17	GEG-305A	Agricultural Studies	2017	<ul style="list-style-type: none"> To focus on evolution of Agriculture through at the different ages and approaches. To understand the concepts and importance of determinants in different cropping patterns. <p>To understand agricultural allocation theories also the problem and prospects of Indian Agriculture</p>
18	GEG-305B	Regional Geography of India with special reference to Andhra Pradesh		<ul style="list-style-type: none"> To develop the understanding about physical features of Indian Geography. To familiarize the students with physiography, Drainage, Climate, soil and natural vegetation of India.
19	GEG-305C	Disaster Management Studies	2017	<ul style="list-style-type: none"> To develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness. To create awareness on human and natural disasters To understand classification of disasters and its impacts
20	GEG-306A	Regional Geography of	2017	<ul style="list-style-type: none"> To acquaint the students with re-organization of Andhra Pradesh and its new physical, climate

		Andhra Pradesh		<p>and drainage aspects..</p> <ul style="list-style-type: none"> • To obtain the knowledge of demographic, irrigation and major crops. • To understand Andhra Pradesh mineral and industrial aspects with transportation. • To improve knowledge on the transportation and communication aspects of Andhra Pradesh
21	GEG-306B	Geographical information System (GIS) and Global Positioning System (GPS) applications	2017	<ul style="list-style-type: none"> • To develop the skill of understanding GPS and Survey. • To create awareness on post processing of GPS data and collection of data from GPS survey. • To develop skill of report writing by using GPS data and software and hardware To acquaint knowledge about especially Geographic Information System (GIS) softwares. • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage. • To develop the skill on analysis methods of GIS.
22	GEG-401	Regional Planning	2017	<ul style="list-style-type: none"> • To apprise the concept of Region and its planning. • To explain the types of regions and regional hierarchy. • To explain the types of regional planning and planning process. • To the people participation in planning process and role of Panchayat Raj system

				<ul style="list-style-type: none"> • To explain the resource based and physiographic based regional planning.
23	GEG-402	Advanced Remote Sensing	2017	<ul style="list-style-type: none"> • To give broad knowledge on photogrammetry, Principle, process, platforms and techniques and Aerial photographs. • To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques. • To understand the application of remote Sensing and Photogrammetry in various fields of study.
24	GEG-403P	Research Techniques	2017	<ul style="list-style-type: none"> • To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis. • To calculate and apply measures of location and measures of dispersion--grouped and ungrouped data cases. <p>To sensitize the different Research and agricultural techniques</p>
25	GEG-404P	Remote Sensing Applications	2017	<ul style="list-style-type: none"> • To explain practical knowledge on Remote sensing applications... • To help to understand Visual and digital interpretation of satellite Images. • To illustrate interpretation of Aerial photos. <p>To acquaint knowledge on allocation of RS in different fields and sectors</p>
26	GEG-405A	Water and Soil Resource	2017	<ul style="list-style-type: none"> • To apprise the student to various water resources related aspects and hydrological cycle. • To focus on groundwater and soil specifications.

		Management		To develop skill of water and soil management and to study on some case studies
27	GEG-405B	Environmental Studies	2017	<ul style="list-style-type: none"> To create the environmental aptitude among students. To familiarize the students with concepts, issues, approaches about physical land To acquaint with contemporary environmental problems and challenges. <p>To provide knowledge on Ecosystem, Biomes, food chain and hydrological cycle</p>
28	GEG-405C	Geography for Research Extension and industry	2017	<ul style="list-style-type: none"> To explain the historical evolution, of research in Geographical studies. To help to understand about ethics, methods and factors in geographical research. To provide the knowledge about forms of research and design. To illustrate research methods and data collection. <p>To acquaint research analysis and report writing</p>
29	GEG-406A	Regional Geography of India	2017	<ul style="list-style-type: none"> To conceptualize the regional approaches and to examine regional differentiation in the study of Indian Geography. To expose to historical, economic, cultural, social and physical characteristics of India. <p>To provide an introduction to the regions of the India in terms of both their uniqueness and similarities</p>
30	GEG-406B	Remote sensing Principles and Applications	2017	<ul style="list-style-type: none"> To explain practical knowledge on Remote sensing applications... To help to understand Visual and digital interpretation of satellite Images. To illustrate interpretation of Aerial photos.

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36. Geology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEO-101	Geomorphology and Paleontology	2017	<p>1) Able to explain conceptual approaches in geomorphology.</p> <p>2) Able to describe land forms and land forming processes in different climatezones and tectonic regimes.</p> <p>3) Able to explain different theories and models for landscape evolution.</p> <p>4) Obtain knowledge in recognizing and minimizing the mass wasting.</p> <p>5) Able to apply geomorphological concepts in economically important projects.</p> <p>6) <i>Palaeontology</i> is the study of prehistoric species, mostly ones that are extinct. It focuses primarily on fossil data, using a variety of physical, chemical and biological.</p> <p>7) Paleontology has essentially three basic goals: (1) to describe the world's</p>

				past biodiversity; (2) to outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.
2	GEO-102	Crystallography & Mineralogy	2017	<ol style="list-style-type: none"> 1) Students will be able to describe crystal structures, crystal symmetry and twinning 2) Students will learn the use of X-ray crystallography to determine the arrangement Atoms in a crystal. 3) Students will be able to identify the mineralogical composition of geological materials by studying some of the optical properties and techniques in order to reveal their origin and evolution. 4) Students will get thorough knowledge about the physical chemical and optical Characteristics of minerals could lead to the discovery of new uses for Earth's mineral resources.
3	GEO-103P	Crystallography & Mineralogy	2017	<ol style="list-style-type: none"> 1. The student understands the importance of minerals to society and to the study of the Earth. 2. Can explain how the properties of chemical elements and their bonds regulate the structure and composition of minerals. 3. Demonstrate how the crystal structure of minerals affects the external morphology and physical properties of a mineral (e.g. crystal symmetry, crystal habit). 4. Identify various minerals using Physical properties. 5. Identify various crystal forms shown by minerals belonging to different crystal system.

4	GEO-104P	Geomorphology & Paleontology	2017	<p>1) The practical application of geomorphological science now forms river restoration and environmental protection.</p> <p>2) the extensive experience gained through field work, analysis and input to the design process to provide thorough understanding of geomorphology in the river environment and describe</p> <p>3) Paleontology is highly relevant to the modern and future world. We can learn how climate change has effected past organisms as well as how organisms have changed the physical world. We can also better understand the principles of extinction, evolutionary change, and biodiversity.</p> <p>4) Paleontological resources, or fossils, are any evidence of past life preserved in geologic context. They are a tangible connection to life, landscapes, and climates of the past. They show us how life, landscapes, and climate have changed over time and how living things responded to those changes.</p> <p>5) Paleontology lies between biology and geology since it focuses on the record of past life, but its main source of evidence is fossils in rocks.</p> <p>6) paleontology, also spelled paleontology, scientific study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.</p> <p>7) Body fossils and trace fossils are the principal types of evidence about ancient life, and geochemical evidence has helped to decipher the evolution of life.</p>
5	GEO-105	Stratigraphy &	2017	1) Students would have acquired comprehensive knowledge on principles of

		Paleontology		<p>Stratigraphy, correlation methods classification of Stratigraphy units, tectonic framework of India and Geological timescale.</p> <p>2) Ability to give an account of various stratigraphic units and give stratigraphic column distribution in India, fossil content and economic importance of given geological formation.</p> <p>3) Apply standard stratigraphic codes while preparing geological reports</p> <p>4) Describe morphology, classification, evolutionary trends of Invertebrate fossils with geological and geographic distribution and paleoecological and paleo-environmental relevance.</p> <p>5) Ability to identify, classify and describe the morphology of the invertebrate fossils and plant fossils.</p> <p>6) Application of fossils in establishing the age of the rock unit, correlation with other area, and Use of fossil in finding mineral deposits.</p> <p>7) Ability to apply micropalaeontological techniques in hydrocarbon exploration.</p>
6.	GEO-106	Human Values & Professional Ethics-I	2017	<p>1) After completion of this course the students will be able to know the importance of Ethics and Human Values in various professions.</p> <p>2) Students also will get in depth knowledge and understanding of moral values and ethical code of the Indian Society. Especially embedded in various scriptures.</p>
7.	GEO-201	Structural Geology and	2017	<p>1) Able to demonstrate a basic understanding of stress, strain, rheology of earth's lithosphere and comprehend how to describe and classify brittle and</p>

		Geotectonics		<p>ductile structures.</p> <p>2) Able to describe, identify and analyze the folds, faults and joints and their effects on outcrop pattern.</p> <p>3) Measure, plot and interpret structural field data and can relate these to geological Maps and knows how to read geological maps and geological cross-section.</p> <p>4) Obtain knowledge of shear zone characteristics and textures which are usually highly, Mineralized zones.</p>
8.	GEO-202	Remote Sensing and GIS	2017	<p>1) Develop knowledge in basics of Remote Sensing interpretation keys and applications.</p> <p>2) Formulate the relationship between EMR and satellite Remote Sensing.</p> <p>3) Application for Remote Sensing for important economic deposits.</p> <p>4) Operate GIS data model and demonstrate GIS techniques for various applications.</p> <p>5) Apply RS and GIS techniques to analyze the various geological materials.</p>
9.	GEO-203P	Structural Geology & Sedimentology	2017	<p>1) The interpretation of geological maps and determination of strike and dip, Borehole problems and apparent dip, plunge and pitch of linear structures</p> <p>2) Structural geology concepts and tools to understand rocks deformation in hot environments</p> <p>3) Structural geology with interpretations and simple geomechanical problems and solutions</p> <p>4) Structural geology issues related to new instruments in measuring</p>

				<p>structural data from rocks, paleomagnetic studies in tectonics field studies in structural geology interdisciplinary aspects of structural geology.</p> <p>5) Sedimentology encompasses the study of modern sediments such as sand, silt, and clay, and the processes that result in their formation (erosion and weathering), transport, deposition and diagenesis.</p> <p>6) Sedimentology, the study of sedimentary rocks and the processes by which they are formed, includes and is related to a large number of phenomena.</p> <p>7) Sedimentology includes the five fundamental processes defined by the term sedimentation --weathering, erosion, transportation, deposition and diagenesis.</p>
10.	GEO-204P	Remote Sensing and GIS	2017	<ol style="list-style-type: none"> 1. Understand the concepts of Photogrametry and compute the heights of objects 2. Understand the principles of aerial and satellite remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies. 3. Understand the basic concept of GIS and its applications, know different types of data representation in GIS. 4. Understand and Develop models for GIS spatial Analysis and will be able to know what the questions that GIS can answer are. 5. Apply knowledge of GIS software and able to work with GIS software in various application fields. 6. Illustrate spatial and non spatial data features in GIS and understand the

				map projections and coordinates systems. 7. Apply knowledge of GIS and understand the integration of Remote Sensing and GIS.
11	GEO-205	Sedimentology	2017	1) Able to identify different sedimentary rocks in both hand specimens and thin section and derive information on the depositional conditions and environments. 2) Able to study the sequence of sedimentary rock strata and describe the tectonic framework of sedimentation to understand the earth's history including palaeoclimatology and history of life
12	GEO-206	Human Values & Professional Ethics-II	2017	1) After completion of this course the students will be able to follow and practice good behaviour with human values and moral support to their elderly family members. 2) They also aware and get knowledge about medical ethics how the doctors will behave with patients, what type of ethics should be followed by business people. They also get in through knowledge about the protection of environment social ethics like family ethics, the role of print and electronic media in prevention and protection of Human rights in Indian society.
13	GEO-301	Igneous Petrology	2017	1) Acquire knowledge on the evolution of magma by different processes takes place from origin to emplacement with respect to different tectonic settings. 2) Explain Igneous processes, formation, structures, classification and significance of texture in explaining rock history.

				<p>3) Obtain knowledge on the crystallizing phase equilibrium of multi component magma system.</p> <p>4) Identify different Igneous rocks both in handspecimens and thin sections in terms of their petrogenesis by studying the petrographic characteristics.</p>
14	GEO-302	Metamorphic Petrology	2017	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p>
15	GEO-303P	Petrology	2017	<p>1) Describe the types and relative abundances of phases in a rock based on observations from hand specimens and thin sections</p> <p>2) Interpret the geologic history of igneous rocks based on mineral assemblage and textures using both hand sample and microscope techniques</p> <p>3) Use metamorphic mineral assemblages and textures to constrain deformation history and P-T conditions</p> <p>4) Use geochemical data (partition coefficients, REE plots, etc) to constrain petrogenetic processes</p> <p>5) Integrate their research findings with those of peers in developing a consensus model that (a) explains mineral occurrences and interplay (micro- and macroscopic) in field samples, and (b) holds up to public</p>

				<p>scrutiny (as a consensus model and as individual components) at a departmental mini-poster symposium</p> <p>6) Design and implement a field sampling campaign</p> <p>7) Use a portable X-Ray Fluorescence Spectrometer to collect elemental analyses</p> <p>8) Use MS Excel to organize, plot, and evaluate the petrogenesis of CRB using elemental data</p>
16	GEO-304P	Geochemistry	2017	<p>1) Geochemistry can play a key role in helping to protect the safety of drinking water by identifying the sources, concentration and forms of potentially harmful elements such as arsenic mercury and fluoride in natural water.</p> <p>2) Geochemistry and health establishes and explains links between the natural or disturbed chemical composition of the earth's surface and the health of plants animals and people.</p>
17	GEO-305	Geochemistry and Thermodynamics	2017	<ol style="list-style-type: none"> 1. 1) Understand the behavior of elements in a geochemical context and relate this knowledge to how elements redistribute within the Earth. 2. 2) Learn to interpret and explain interactions between Earth reservoirs. 3. 3) Understand and interpret the major processes that form and modify the Earth's crust and mantle. 4. 4) Use isotopes to trace geological processes and age date specific events.
18	GEO-306	Computer	2017	<ol style="list-style-type: none"> 1) Comprehend the database related to field geological data

		Applications and Geostatistics		<ul style="list-style-type: none"> 2) Prepare and Interpret graphical and pictorial data 3) Exposure to some selected software's related to geology
19	GEO-307	Dimensional Stones and Building Materials	2017	<ul style="list-style-type: none"> 1) Explain the distribution of dimensional stones and occurrence of construction materials 2) Classify dimensional stones and construction materials 3) Assess the suitability of various dimensional stones and construction materials
20	GEO-308	Gemology	2017	<ul style="list-style-type: none"> 1) The course is focused on a comprehensive learning in gemology 2) Understands the formation, classification and properties to final the grading and evaluation. 3) Knowledge in order to identify original gemstones and stimulants 4) Acquire skills which will be useful to them in gem industry
21	GEO-309	Surveying and Field Geology	2017	<ul style="list-style-type: none"> 1) Understand the use of different surveying instruments, field equipment, aerial photographs and their use. 2) Compute the area and earthwork for different works by using surveying instruments 3) Analyze surveying techniques, tools, survey data and geological reports 4) Prepare contour maps, geological maps and reports 5) Solve survey issues using proper survey and interpretation. 6) Use appropriate modern tools in surveying and mapping
22	GEO-401	Economic	2017	<ul style="list-style-type: none"> 1) Its chief objective is to guide the exploration for mineral resources and help

		Geology		<p>determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p> <p>2) <i>Economic geology</i> is concerned with earth materials that can be used for economic and/or industrial purposes. These materials include precious and base...</p> <p>3) Scientific discipline concerned with the distribution of mineral deposits, the economic considerations involved in their recovery, and an assessment of the reserves available.</p> <p>4) Economic geology deals with metal ores, fossil fuels (<i>e.g.</i>, petroleum, natural gas, and coal), and other materials of commercial value, such as salt, gypsum, and building stone. It applies the principles and methods of various other fields of the geologic sciences, most notably geophysics, structural geology, and Stratigraphy . Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p>
23	GEO-402	Mineral Exploration, Mining & Engineering	2017	1) This course linked to industry and acquires knowledge on techniques to locate ore bodies, methods for mineral exploration and geologic aspects of drilling.

		Geology	7	<p>2) Acquire knowledge on geophysical methods for Ore reserve estimation.</p> <p>3) Acquire knowledge on Ore beneficiation processes and techniques.</p> <p>4) Confirm mining rules and regulations</p> <p>5) Able to determine the suitable mining methods</p> <p>6) Analyse different ores and ore beneficiation processes.</p> <p>7) Understand the different engineering properties of rock types and role of geologists in selecting the sites for different major engineering projects.</p>
24	GEO-403P	Economic Geology	2017	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p> <p>4) Acquire practical knowledge on microchemical techniques for identification ores and estimation of ore reserves.</p>
25	GEO-404P	Project Work	2017	<p>Mining is global industry, which provides the raw material and energy resources needed to sustain modern civilization.</p> <p>Demands for mineral consumptions are increasing day to day drastically and also expected to increase in decades to a head of population growth and rising and living standards.</p> <p>Environmental awareness in relating to proper protective and mitigation</p>

				measures to the environment from its damage as soon as a great amount of improvement in mining sector
26	GEO-405	Hydrogeology	2017	<ol style="list-style-type: none"> 1) Apply the knowledge of geological formations and the hydrological properties of rocks 2) Analyze the suitability of water for domestic, irrigation and industrial purposes Conduct geological and geophysical investigations and give recommendations for drilling of borewells. 3) Explain causes of pollution of groundwater give remedial measures to the society. 4) Use modern methods and appropriate techniques to carrying out geophysical studies and artificial recharge methods 5) Students will get critical knowledge on evaluation of geological condition at the major engineering project sites.
27	GEO-406	Environmental Geology & Natural Hazards	2017	<ol style="list-style-type: none"> 1) Explain different aspects of environment and local, regional and global environmental problems. 2) Classify and explain the environmental pollution and disaster control technologies 3) Prepare, interpret and implement environment projects 4) Identify the natural and environmental disasters, its causes and apply preventive measures. 5) Adopt the laws and regulations towards hazard management 6) Able to prepare controls of mitigating toward natural disasters.

28	GEO-407	Water Shed Management	2017	<p>1) Explain the importance of watershed management</p> <p>2) Classify and explain the different water harvesting techniques</p> <p>3) Use modern tools for land erosion control</p> <p>4) Develop or improve the people's participatory approach for sustainable development and management of watersheds.</p>
29	GEO-408	Medical Geology	2017	<p>1) Explain about relationship of human Health and Geological Processes.</p> <p>2) Able to understand the importance of the Water quality standards and impact of micronutrient deficiencies in soils and crops on human health</p> <p>3) Analyse the interaction of abundance of elements and geological effects.</p>
30	GEO-409	Fuel Geology	2017	<p>1)Thecourseoffersadetailedstudyaboutnaturalfuelslikecoalandpetroleumtheir formation and distribution especiallyin sedimentarybasins.</p> <p>2)Studentsshallbenefittohavebasicideasaboutformations,nomenclatureinconstitution of coal working detail of distribution of coals and coal industry in India, Sufficient idea of formationand entrapment of oil and gas.</p> <p>3)Get elaborate knowledge about occurrence of atomic minerals in nature, methods of prospecting, atomic fuels and environment.</p>

37. Home Science

Food Science Nutrition & Dietetics

S.No	Course Code	Title of the Course	Year of Introd	Activities/Content	with	direct	bearing	on
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			ion	Employability/Entrepreneurship /Skill development
1	FSND 101	Food Chemistry and Analysis	2017	<p>Knowledge on chemical composition physical, chemical, and functional properties of Water, carbohydrate, Protein and Fats.</p> <p>Understand the principles and working applications of different analytical techniques associated with food.</p> <p>skills in qualitative and quantitative estimation of nutrients in different foods.</p> <p>This course gives on hands on experience which will help student to become food analyst at local, regional, national and global levels.</p>
2	FSND 102	Food Science and Experimental Foods	2017	<p>This course will give knowledge on Plant and Animal foods composition, and processing techniques on nutritive quality of foods.</p> <p>Understand the principles of cookery of different foods and methods of evaluation.</p> <p>This course is prerequisite for skill development in Food Product development.</p> <p>Standardization and experimentation on different foods leading to physical, chemical and sensory changes can be understood leading to become food research analyst in industries at local, regional, national levels.</p>
3	FSND 103	Clinical Nutrition and Dietetics-I	2017	<p>The concepts of nutrition and its relation to health and describe the role and responsibilities of Dietitian in Hospital will be dealt.</p> <p>Knowledge related to Therapeutic modification of diets and Plan and prepare diet for different diseases conditions.</p>

				This will help the students to get employability in hospitals and also start their own diet and nutrition clinics.
4	FSND 104	Food Chemistry and Analysis Practical	2017	Developing skills in quantitative and qualitative analysis of Nutrients in foods. This course will help the students to develop skills as food analyst for employability.
5	FSND 105	Food Science and Experimental Foods Practical	2017	Standardization of foods using different processing techniques is included along with skills in processing, preparation and evaluation of bakery products. This helps in employability and entrepreneurial opportunities for the students
6	FSND 106	Clinical Nutrition and Dietetics-I Practical	2017	This course gives hands on experience in Therapeutic modifications of diet for different diseases by planning, preparing and evaluating.
7	FSND 107	Essential of Food and Community Nutrition	2017	Nutrients in food, their functions and consequences of deficiency is included in this course. Developing skills for planning diets for nutritional disorders like PEM, Iron, Vitamin A and Iodine and the knowledge of techniques to assess the nutritional status of different age groups. Acquire knowledge on government programs to prevent nutritional disorders according to regional and national needs. Community assessment skills in terms of anthropometry, dietary, clinical and biochemical for various disorders and planning programs for important

				<p>days is given along with</p> <p>Applications of Computational skills in the Nutritional allowances during life span.</p>
8	FSND 108	Human Values and Professional Ethics-I	2017	The students understand the importance of good character, conduct and values embedded in various religions. Demonstrate knowledge of ethical values in non-class room activities, internships and field work.
9	FSND-201	Nutritional Bio chemistry	2017	<p>This course deals with the metabolism of nutrients such as carbohydrates, proteins, lipids, minerals and vitamins in human physiology acquire knowledge on factors affecting digestion, absorption of nutrients.</p> <p>Create awareness on enzymes and its role in nutrient metabolism and gain knowledge on role of vitamins and minerals as coenzymes in metabolism.</p>
10	FSND-202	Food Microbiology and Safety	2017	<p>Knowledge acquirement about important genera of microorganisms associated with food.</p> <p>This course makes the student to acquaint with the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms and food contaminants and their sources.</p> <p>Gain knowledge on the characteristics of food borne diseases, infections and intoxications and their identification and make the students to fit in as food microbiologist at national level.</p>
11	FSND-203	Clinical Nutrition and Dietetics-II	2017	The concepts of dietary principles for various diseases and comprehend knowledge in Dietary modifications for the management of diseases is included in the course.

				<p>Application of principals in preparation and service of diets to the patients and assess the case studies and construct the diet charts will be explained.</p> <p>This course will be helpful in creating employability and entrepreneurship at local and national levels.</p>
12	FSND-204	Nutritional Bio chemistry Practical	2017	<p>Developing skill and hands on experience in analysis of biochemical parameters in blood and serum will be carried out in this course.</p>
13	FSND-205	Food Microbiology and Safety Practical	2017	<p>Standard methods and procedures for the microbiological analysis of food will be dealt in this course to have skill development and employability in food industries at local, regional and national level.</p>
14	FSND-206	Clinical Nutrition and Dietetics-II Practical	2017	<p>Application of principals in preparation and service of diets to the patients and assess the case studies and construct the diet charts will be explained.</p> <p>This course will be helpful in creating employability and entrepreneurship.</p>
15	FSND-207	Research Methodology	2017	<p>The concept of doing research and terms like ‘variables’, ‘hypotheses, and ‘research ‘and different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research are dealt in this course.</p> <p>This course helps student to critically gain knowledge to select a sample by using different sampling methods like probability and non-probability sampling.</p> <p>Develop a research proposal in the appropriate scientific style to help</p>

				<p>students for skill development for higher learning.</p> <p>This course makes the student to understand about the scope of statistics in research, concepts of inferential statistics like t-test, chi-square, Correlation and Variance.</p> <p>Basics in computer and its application in statistics and development of skill in computing statistics by using statistical software will be imparted.</p>
16	FSND-208	Human Values and Professional Ethics-II	2017	<p>Understand the importance of value education and ethics in medical, business, environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.</p>
17	FSND 301	Food Processing and Preservation Technology	2017	<p>The course illustrates the principles and scope of food processing and preservation along with various techniques/methods.</p> <p>Knowledge acquirement on advanced emerging technologies and their applications in food processing and preservation is imparted to the students.</p> <p>This course creates opportunities in local, regional, national levels.</p>
18	FSND 302	Advances in Human Nutrition	2017	<p>The course appraises the advance concepts of nutrition of Brain, Immunity and Sports along with the concepts of dietary management in endemic nutrition problems.</p> <p>This course create knowledge on the dietary management during emergencies and the process and relation of immunity and nutrition.</p>
19	FSND - 303	Rural Work Experience	2017	<p>This course will help students to gain skill and have hands on experience in assessing a community in relation to nutrition, human development and</p>

				extension activities.
20	FSND-304	Internship	2017	Internship as dietitian in government and corporate hospitals give practitioner skills and hands on experience for entry-level dietitians who are able to assume leadership roles to improve and maintain the nutritional care of diverse individuals, families and communities within national and global populations.
21	FSND- 305	(a) Nutrition Research Techniques (b) Geriatric Nutrition (c) Nutrition in Emergencies and Disaster	2017	(a). Understanding the methods of nutritional status assessment like Anthropometry, Biochemical, Clinical and Dietary will be dealt in this course. Application of knowledge on assessment techniques of protein quality in diets and Plan nutrition research using animal models is given in this course along with designing in nutrition research using Human models. (b). Understanding the physiological changes and theories of ageing and gaining knowledge on importance and consequences of diet in elderly is included in this course. Creating awareness on degenerative diseases, life style genesis and its management through diet and acquainting with the government programs and policies for elderly is included. (c). This course helps to assess the emergency situations related to food and Nutrition in natural and manmade disasters and nutrition surveillance and treatment in emergencies.
22	FSND- 306	(a) Fundamentals of	2017	(a) The course will help students to gain knowledge on foods, food groups,

		Food, Nutrition and Health (b) Nutritional Assessment		<p>balanced diet for different age groups and understand the importance of macro and micronutrients in daily diet.</p> <p>Comprehending knowledge on deficiency symptoms of different nutrients and developing skills and hands on experience to assess nutritional problems in community is included in the course.</p> <p>(b) Understanding the methods of nutritional status assessment like Anthropometry, Biochemical, Clinical and Dietary will be dealt in this course.</p> <p>Application of knowledge on assessment techniques of protein quality in diets and Plan nutrition research using animal models is given in this course along with designing in nutrition research using Human models.</p>
23	FSND 401	Food Safety Standards and Quality Control	2017	<p>This course includes the current food safety standards rules and regulations and gain knowledge on desirable and undesirable constituents and contaminants in foods.</p> <p>This course helps students to critical analysis on subjective and objective methods of quality of food and develop skills for quality analysis and assurance of food at national level.</p>
24	FSND 402	Food Product Development and Marketing	2017	<p>This course illustrates the new product categories in food market and their characteristics and elucidate the process of new food product development in food industry.</p> <p>Exemplifying various specialty food products and their applications and acquiring the skill to design and development of new food product and</p>

				analyzing the quality of the product is imparted.
25	FSND-403	Nutrition for Health and Fitness/ Dissertation	2017	<p>The course defines the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation.</p> <p>Energy metabolism pathways during physical activity and describing the role of macronutrients in physical performance, weight management and obesity has been included.</p> <p>This course also explains the nutritional needs in different sports and the role of national agencies, thereby creating employability in Nutrition fitness centers at local, regional and national levels.</p>
26	FSND-404	Food Safety Standards and Product Development Practical's	2017	<p>This course helps students to critically analyse subjective and objective methods of quality of food and develop skills for quality analysis and assurance of food.</p> <p>Skill to design and development of new food product and analyzing the quality of the product is imparted thereby employability in national organizations like FSSAI.</p>
27	FSND-405	(a) Institutional Food Service Management (b) Baking Technology	2017	<p>(a) The course will gain knowledge on the different types and management of food services and exposure to the dietary department in a hospital setting. Knowledge on finance, personnel management, duties and responsibilities of dietitians will be learnt.</p> <p>(b) Gaining skills to act in a variety of capacities in clinical, administrative, and community settings and quantitative food production and planning diet plans for different diseases by placing in hospitals is practiced.</p>

		(c) Food Packaging		<p>(c) This course provide knowledge on packaging and packaging materials an overview of the scientific and technical aspects of food packaging. Enabling the students to understand the regulations of packaging and packaging material testing and applying skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life was included.</p>
28	FSND-406	<p>(a) Child Welfare Programmes</p> <p>(b) Disaster Management</p>	2017	<p>(a) The course helps the students to know the terms growth, development and stages of development across life span and understand the characteristics of children at different stages of childhood</p> <p>Explaining the different developments like physical, cognitive, language and social development during childhood and applying knowledge to understand normal development and developmental delays during childhood is studied.</p> <p>(b). The course helps to know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management and to understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters.</p> <p>Explaining the efforts made by the NGOs, Community based organizations and local administration in disaster management will be dealt in the course.</p>

Human Development and Child Welfare

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1.	HDCW-101	Advanced Study of Child Development	2017	Students acquire the knowledge of holistic development of individuals from conception to adolescent period. The students can disseminate the knowledge to teachers and parents regarding normal and delayed development among children. The students can apply skills when they serve as teachers at local level or as extension officers in national schemes like ICDS.
2.	HDCW-102	Community Nutrition	2017	Students acquire knowledge about food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural forming , ICDS etc.
3.	HDCW-103	Trends in Early Childhood Education	2017	Students apply knowledge about appropriate approaches to teach pre- school children. They apply skills in the field of early childhood education, when they are placed as pre -school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
4.	HDCW-104	Practical-I Developmental Assessment Practical		Students acquire skills on apply skills of observation of recording of all round development among infant and children below 5 years. They learnt how to assess cognitive ,physical, social &emotional development of children from late childhood to adolescent period, and life skills among adolescents.. The students can apply skills when they as teachers at local level or as extension

				officers in national schemes like ICDS.
5.	HDCW-105	Practical-II Community Nutrition Practical	2017	Students apply skills related to food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural forming , ICDS etc.
6.	HDCW-106	Practical-III Early Childhood Education Practical	2017	Students apply skills in the field of early childhood education, when they are placed as pre-school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
7.	HDCW-107	Family Dynamics	2017	Students will get knowledge related to issues in family and society and understand laws related to marriage and family . Students utilize this knowledge when they work in national organizations like social welfare board and family counseling centers and in non-government organizations catering to the family welfare at local level like PASS ,RASS etc..
8.	HDCW-108	Human Values and Professional Ethics- I	2017	Students understand the importance of good character , conduct and values embedded in various religions . Demonstrate knowledge of ethical values in non-class room activities, internships and field work.
9.	HDCW-201	Quality Standards in ECE Centers	2017	Students will get knowledge about planning activities for pre-school children .They understand different ways of teaching stories ,rhymes etc using different audio-visual aids.apply skills in planning a day's activities for pre - school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience

				helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing pre- school education
10.	HDCW -202	Child Study Techniques	2017	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
11.	HDCW -203	Children with Developmental Challenges	2017	Students gain knowledge about the causes for various impairments and principles of assessment of children with disabilities and gifted children. The practical skills of management of special children were to be treated when they are placed as special educators in local schools ,colleges and at national Government organizations like NIMH,NIHH at national level and non government organizations at local level like Nava Jeevan center for Visually Challenged, RASS, PASS etc.
12.	HDCW-204	Practical-I Participation in ECE Center Practical	2017	Students will be able to apply skills in planning a day's activities for pre - school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level

				programs that are providing pre- school education
13.	HDCW-205	Practical-II Child Study Techniques Practical	2017	Students are apply skillsfor assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital
14.	HDCW-206	Practical-III Children with Developmental Challenges Practical	2017	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
15.	HDCW-207	Research Methodology	2017	Student gain knowledge about types of research ,different methods of sampling and preparation of schedules/questionnaires. The students get skills in preparation of a research proposal. The knowledge helps the students to write articles for journals at national and international levels.
16.	HDCW -208	Human Values of Professional Ethics - II	2017	Understand the importance of value education and ethics in medical ,business ,environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.
17.	HDCW -301	Parent Education	2017	Students gain knowledge about different child rearing practices and parenting styles adopted by parents. Gain skills in planning education materials for parents ,conduct parent education programs in schools and community, when

				they work as a teachers at local schools. It helps to disseminate the knowledge related to impact of parenting styles on child behavior to parents , teachers and significant others in the community.
18.	HDCW-302	Theories and Approaches to Child Guidance	2017	Students describe different theories related to child development and understand the reasons for maladaptive behavior. Apply the knowledge of theories to understand the behavior of individuals and also in counselling , when they join as counselors at local schools and mental health institutions at regional level like VIMHANS ,Vijayawada , at national level like NIMH ,Hyderabad and at local level Child Guidance clinics run by Government hospitals like SVRR hospital.
19.	HDCW-303	Practical -I Rural Work Experience	2017	Students develop an understanding of rural life situations and problems related to nutrition and child development relevant to real field situations through practical training. They gain knowledge and skills to impart education related to health and nutrition to the rural audience. This experience will helpful when they join rural development programs run by government like Health and Nutrition Natural Farming Fellow in Natural Farming Project.
20.	HDCW-304	Practical-II Internship	2017	Students get hands-on experience in real life work settings relevant to the human development like SODHANA, Vijayanagaram, Christian Counselling Centre,Vellore, Sudheesha Counselling Centre, Hyderabad, VIMHANS, Vijayawada.
21.	HDCW-305	Generic Elective* a) Infant	2017	(a)Students gain knowledge of stimulation activities for physical ,language ,cognitive and social development of infants. The

		Development and Stimulation b Family Life Education c) Planning For Project Management		<p>knowledge and skills will help to plan stimulation activities for infants ,when they establish crèche as entrepreneurs or serve in Day care centers.</p> <p>(b)Students understands the concepts of family life populationexplosion and education of family and population. The knowledge helps to understand the impact of over population and skills for obtain managing quality family life.</p> <p>(c) Students gain knowledge in identification of problem for a research project, apply skills in selection of tools ,data collection and report writing .The knowledge helps the students to write articles for national and international levels and also to take up small projects.</p>
23.	HDCW -401	Guidance and Counselling in Human Development	2017	Students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS ,PASS ,VIMHANS ,Vijayawada etc.
24.	HDCW -402	Advanced Human Development	2017	Students understand the characteristics and problems of early, middle and late adulthood persons. This knowledge helps when they get employment in Day care (or) foster care centers for elderly citizens (or) employment in Govt and , local old age homes run by non govt organizations like RASS and PASS etc.
25.	HDCW -403	Rehabilitation and Management of Children with Special Needs	2017	Students understand the importance of Rehabilitation of children with developmental challenges through multi disciplinary approach. Gets practical knowledge about functioning of Govt and voluntary organizations that are managing children with developmental challenges .This helps students when

				they join as special educators at govt organizations like NIMH, Hyderabad and non govt organizations like RASS,PASS.
26.	HDCW-404	Practical Guidance and Counseling Practical	2017	Students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS ,PASS ,VIMHANS ,Vijayawada etc.
27.	HDCW-404	Generic Elective* (a) Child and Human Rights or (b) Organization and management of Child welfare Institutions (c) Care For Elderly	2017	a).Students gain knowledge about human rights ,child rights and women rights. They can explains issues faced by women and children in difficult circumstances . The knowledge helps to understand the rights and problems of women and children when they work in Government organizations like Child Protection Officers. b).Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc. c).Students understand the characteristics of old age theories relating to aging and causative factors for problems during old age. This knowledge helps when they establish care centers for elderly as entrepreneurs or work in organization catering to the welfare of elderly like “Karunadamam” run by TTD and Nava Jeevan old age home at local level.
28.	HDCW-406	Open Elective*	2017	a). Students gain knowledge about the organizations striving for child welfare

	(For other departments) a) Child Welfare Programs or (b) Disaster management		at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc. b).Students gain in-depth knowledge about natural disasters; manmade disasters; chemical hazards : disaster management. This helps to understand efforts made by the NGOs, Community based organizations and local administration in disaster management and also to help Government in times of disasters.
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Extension Management and Communication Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	EMCT-101	Extension Education in Community Development	2017	The students can gain understanding on the Extension Management community development and panchayat raj system to study the community by using PRA and various approaches of extension education. The students will get jobs as extension officers, and various placements in community development projects, as well as rural co-operative sector.
2	EMCT-102	Community Nutrition	2017	The students know about nutrients in food and know about the nutritional deficiencies and the community level problems and policies and programmes

				of Nutrition.
3	EMCT-103	Communication and Media Preparation	2017	The concept of Communication –Recent trends in Instructional technology: Extension literature and the role of different factors influencing and effecting communication process- Dyad setting small group and mass communication. This course will help the students to improve their communication skills.
4	EMCT-104	Extension Education in Community Development Practical	2017	The students will acquire skill to study the community by using PRA techniques and develop the skill of critical analysis on various approaches of extension education.
5	EMCT-105	Community Nutrition Practical	2017	Students gain practical knowledge on the role of nutrients in different stages of human life and methods of nutritional assessment and community level problems and policies.
6.	EMCT-106	Communication and Media Preparation Practical	2017	Students analyze the role of different factors influencing and effecting communication process, preparation and use of different teaching aids in teaching different groups of people and in different learning situations.
7.	EMCT-107	Dynamics of Rural	2017	The students will gain knowledge on social structure; characteristics of rural

		Society		people; rural social problems - social institutions, learn the factors affecting social change and gain insight about the welfare policies and programmes for rural society.
8.	EMCT-108	Human Values and Professional Ethics-1	2017	Students will apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.
9.	EMCT-201	Entrepreneurial Development and Empowerment of Women	2017	Students acquire knowledge on Entrepreneurship, about the strategies for empowering women; rights of women and develop the entrepreneurship skills and learn about the institutional support of entrepreneurship. This course will help the students to become good entrepreneurs and also to start their own business enterprise.
10.	EMCT-202	Educational Technology	2017	The students gain knowledge on concept of teaching learning process; forms and levels of teaching and learning; curriculum design, development knowledge on genesis and trends in modern education. This will help the students to develop the curriculum and to choose their career in the teaching field.
11	EMCT-203	Community organization and Leadership	2017	Students will know about community organization, process of Community organization, rural institutions, leadership, analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth

				clubs; Role of Panchayat in developing rural women.
12	EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2017	Students will realize the role of entrepreneurship in economic development. Develop the skill of writing the business proposal and starting of business enterprise.
13	EMCT-205	Educational Technology Practical	2017	Students will develop the skill on developing a course curriculum; Preparation of lesson plans of selected topics and use of different instructional materials.
14	EMCT-206	Community Organization and Leadership Practical	2017	Students will develop the skill on different patterns of leadership, techniques of identification of leaders, and appraise the ongoing programmes in the locality.
15	EMCT-207	Research Methodology	2017	Students get knowledge on ‘variables’, ‘hypothesis’ ,research ‘and recognize the purpose of doing a research, sampling methods and develop a research proposal in the appropriate scientific style.
16	EMCT-208	Human values and Professional Ethics-II	2017	Students gain knowledge on ‘value education’ ‘self-introspection’ and ‘self-esteem develop well balanced personality, socially responsible persons of the society.
17	EMCT-301	Rural Development Administration	2017	Students gain insight about administration in Extension and rural development: coordination and supervision in rural development administration, the purpose

				and principles of administration; human relation in extension administration the recent ongoing rural development programmes etc. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
18	EMCT-302	Training and Development	2017	Students will learn the concept of training, goals of training; learning and types of learning, factors affecting learning among adult, current trends in training methodologies; training strategies and designs and acquire skills in developing; selection and use of different training methods- case study; role play; and brain storming; etc. This course will help the students to get jobs as Trainee- motivators, Trainers, consultants etc.
19	EMCT-303	Rural Work Experience	2017	Students will develop an understanding of rural life situations prevailing in villages with special reference to Home science among the student will know about socioeconomic conditions of people and their problems and several agencies and institutions involved in rural development.
20	EMCT-304	Internship	2017	Students will gain first-hand exposure of working with NGOs. This will provide a practice-oriented and 'Hands-on' working experience in the NGOs / Government organizations and to enhance the students learning experience.
21	EMCT-305	(a)Managerial Skills for Extension Professionals	2017	Students will know about the conceptualization of management process and its major functions, managerial skill; nature and importance for extension professionals. To understand the concept; scope and relevance of media in

		<p>(b) Communication Technologies in Extension</p> <p>c) Sustainable Livelihood Systems</p>		<p>society; functions and future prospects of media systems</p> <p>To understand the concept; scope and Communication technologies, relevance of media in society; functions and future prospects of media systems etc</p> <p>Students will know about the livelihoods of rural/urban people; resources – land, soil; climate; water and forests; processes and relationships among agro-climatic and natural resources, understand the production systems- farming and non-farming activities; their linkage with the livelihoods of rural people, food security; livelihood security, indicators of environmental sustainability.</p>
22	EMCT-306	<p>(a) Fundamentals of Food. Nutrition and Health</p> <p>(or)</p> <p>(b) Nutritional Assessment</p>	2017	<p>Students gain knowledge on foods, food groups, balanced diet for different age groups, understand the importance of macro and micronutrients in daily diet.</p> <p>Students will learn the determinants of nutritional surveillance; understand the direct and indirect methods of nutritional assessment. Gain knowledge on dietary assessment at individual and house hold level. Identify the clinical symptoms and biochemical tests for different nutritional problems.</p>
23	EMCT-401	Principles of Guidance and	2017	Develop knowledge about the concept; purpose; functions and role of guidance; types of services in a guidance programme , counseling and counseling theories,

		Counseling		group guidance and counseling; concept; characteristics; Individual v/s group techniques. This course will help the students to get jobs as counselors and in Government and Non-government organizations, as counselors, consultant research co-coordinators etc
24	EMCT-402	Extension Programme Planning and Evaluation	2017	Students will get knowledge about Programme planning in Extension; Programme Implementation; Programme Evaluation, Documentation, Programme Planning; the Preparation of plan of work ; Purpose, types and tools of Evaluation; Programme planning and implementation, documentation in Programme implementation. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
25	EMCT-403	Thesis/ Community Health Management	2017	Students gain knowledge about the concept of community health and global health; Primary Health Care – definitions; principles; components; comprehensive health care; levels of prevention, major health problems in India, management information systems in health, health needs of special groups – women, infants; and children; health of adolescents; geriatric health needs and problems.

26	EMCT-404	Principles of Guidance and Programme Planning Practical	2017	Assess the guidance programmes and counseling process in school and out of school settings and analyze use of standard test of study habits and attitudes (SSHA) for analyzing the study habits and attitudes.
27	EMCT-405	(a) Extension Management (b) Science & Technology for Rural Women (c) Environmental Management	2017	<p>Students will know about administration and management; process of management and organizational climate, understand the qualities and functions of extension personnel; Problems and issues of extension management in India.</p> <p>Analyze the management skills of extension personnel.</p> <p>Students will learn about the Science and Technology for rural development; Energy saving devices-application of solar energy; bio-gas etc., application of Science and Technology in Home science, safe water supply methods suitable for rural areas; health- hygiene and environmental sanitation.</p> <p>,agencies involved in research and application of Science and Technology.</p> <p>Students will get the knowledge about the life and the environment; physical-chemical factors in the environment; changes in the environment; eco-system-earth, methods of waste management; women and environment government and non-governmental agencies in promoting better health, factors affecting</p>

				changes in ecosystem and environment
28	EMCT-406	(a) Child Welfare Programmes or (b) Disaster Management	2017	<p>Students will learn concepts of ‘child’ and ‘child welfare’, enlist children in need of care and difficult circumstances, understand the role of government, child welfare programmes developmental and rehabilitative manner to the disadvantaged people in the society, monitoring and evaluation</p> <p>Students will get an insight about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management., global warming etc)efforts made by the NGOs, & Community based organizations and local administration in disaster management.</p>

Food Technology

S. No	Course Code	Title of the Course	Years	of Activities/Content with direct bearing on Introduction Employability/Entrepreneurship/Skill development
1	FT-101	Food Chemistry and Analysis	2017	<ul style="list-style-type: none"> - Students will acquire knowledge about physical, chemical, and functional properties of foods. - Learn the fundamental principles and working applications of different analytical techniques associated with food. - Students will be able to explore and perform skills in qualitative and quantitative estimation of nutrients in different foods.
2	FT-102	Food Science and Experimental Foods	2017	<ul style="list-style-type: none"> - Students will acquire knowledge on structure, composition and functional properties of plant and Animal foods. - Understand the principles of cookery of different foods and methods of evaluation. - Students will be able to apply the scientific method and quantitative techniques in standardisation of foods using different processing techniques.
3	FT-103	Cereal Grains, Legumes and Oilseed Technology	2017	<ul style="list-style-type: none"> - Students will gain knowledge on the structure and composition of cereal grains, pulses and oil seeds. - Understanding of the basic concepts of Post harvest technology,

				<p>mechanism of equipments and processing of cereals, pulses and oilseeds</p> <ul style="list-style-type: none"> - Know about various processing, milling process and evaluate Traditional and commercially processed foods with cereals, pulses and oilseeds
4	Practical-I	Food Chemistry and Analysis	2017	<ul style="list-style-type: none"> - The students will know about principles and working applications of different analytical techniques associated with food. - Perform skills in qualitative and quantitative estimation of nutrients in different foods.
5	Practical-II	Food Science and Experimental Foods	2017	<ul style="list-style-type: none"> - Comprehensive knowledge on techniques of analysing, evaluating and application of foods in different processing techniques in foods.
6.	Practical-III	Cereal Grains, Legumes and Oilseed Technology	2017	<ul style="list-style-type: none"> - The students will be able to explore knowledge on various processing techniques of cereals, legumes and oilseeds. - Students acquire knowledge in various food applications and product preparations.
7.	FT-104	Essentials of Food and	2017	<ul style="list-style-type: none"> - Students gain knowledge about nutrients in food and their functions.

		Community Nutrition		<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups
8.	FT-105	Human Values and Professional Ethics - I	2017	<ul style="list-style-type: none"> - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. - Introducing different concepts of Bhagavad Gita and its applications in uplifting of values in the present society.
9.	FT-201	Technology of Horticulture produce	2017	<ul style="list-style-type: none"> - Attain an overview on the classification composition and post-harvest handling technologies of fruits and vegetables to reduce postharvest losses and their value addition. - Impart the knowledge of processing, preservation and manufacture of fruits and vegetable based food products of fruits and vegetables. - Expertise in development of various Fruits & vegetables based products and assess the quality of fruit and vegetables and their products.
10.	FT-202	Food Microbiology and Safety	2017	<ul style="list-style-type: none"> - Obtain knowledge about important genera of microorganisms associated with food and food spoilages. - Understand the various factors associated with growth, food spoilage

				<p>and food-borne diseases of different microorganisms.</p> <ul style="list-style-type: none"> - Demonstrate the use of standard methods and procedures for the microbiological analysis of food
11	FT-203	Dairy Technology	2017	<ul style="list-style-type: none"> - Impart the knowledge of milk grading , composition and technologies of processing of milk and milk products. - Provide in-depth knowledge in various unit operations and developments in dairy processing. - Demonstrate the manufacturing of various dairy products and exemplify the quality of dairy products.
12	Practical-I	Technology of Horticulture produce	2017	<ul style="list-style-type: none"> - Student will know about various fruit and vegetable processing techniques and attain practical knowledge in production and preparation of products
13	Practical-II	Food Microbiology and Safety	2017	<ul style="list-style-type: none"> - Acquire knowledge on laboratory techniques to identify microorganisms in food. - Demonstrate the various microbial estimations in foods by applying standard techniques.
14	Practical-III	Dairy Technology	2017	<ul style="list-style-type: none"> - Students acquire knowledge of grading, composition, quality evaluation and processing techniques of milk and milk products.

15	FT-204	Research Methodology	2017	<ul style="list-style-type: none"> - Awareness about terms like ‘variables’, ‘hypothesis’, research ‘and recognize the purpose of doing research. - Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. - Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling and development of research proposal.
16	FT-205	Human Values and Professional Ethics – II	2017	<ul style="list-style-type: none"> - Student will know the values of ethics in various fields including medical, social and business ethics. - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	FT-301	Food processing and Preservation Technology	2017	<ul style="list-style-type: none"> - Students able to understand the scope, principles and different methods of processing and preservation techniques. - Acquire knowledge of emerging technologies and their applications in food processing and preservation. - Understand the applications and limitations of food processing and preservation technology.
18	FT-302	Live Stock and Sea Food	2017	<ul style="list-style-type: none"> - Acquire knowledge of the structure, composition, nutritional quality of various, livestock and seafood.

		technology		<ul style="list-style-type: none"> - Gain insight knowledge of slaughtering, carcass processing, processing methods used for processing meat poultry and fish. - Prepare various value-added products of egg, meat, poultry and sea foods.
19	Practical-I	Food Processing and Preservation Technology	2017	<ul style="list-style-type: none"> - Student acquires knowledge of emerging technologies and their applications in various processing techniques and products of various foods by processing and preservation methods.
20	Practical-II	In plant training	2017	<ul style="list-style-type: none"> - Provide hands on experience with regard to different areas in food industries. - Acquaint and gain knowledge related to production, unit operations, quality control and marketing aspects of food industry. - Emphasize the prominence of food plant sanitation, food safety, standards, laws and regulation in food industry.
21	FT -303(a)	a)Unit operations in Food Industry.	2017	<ul style="list-style-type: none"> - Important preliminary operations in food processing industries and understand the principle of Unit operation in food industry. - Impart knowledge on Safety, sanitation and Effluent Treatment in food industry. - Know the different pre and post processing operations as storage and packaging foods etc.

22	FT -303(b)	b) Spices, Condiments and Plantation Crops	2017	<ul style="list-style-type: none"> - Students acquire knowledge, identification and post-harvest technologies of various spices, condiments and plantation crops. - Illustrate various value added products of spices, condiments and plantation crops. - Perceive Standards, specifications, packaging and Quality control measures of spices, condiments and plantation crops.
23	FT -303(c)	c) Nutrition in Emergencies and Disaster	2017	<ul style="list-style-type: none"> - Explain concepts on Epidemiology and its application in planning programs during emergencies and emergency situations in natural and manmade disasters. - Gain knowledge on nutrition surveillance and treatment in emergencies. - Knowledge on planning nutrition relief and rehabilitation in emergencies.
24	FT -304(a)	(a) Fundamentals of Food, Nutrition and Health	2017	<ul style="list-style-type: none"> - Gain knowledge on foods, food groups, balanced diet and importance of macro and micronutrients for different age groups in daily diet. - Comprehend knowledge on deficiency symptoms of different nutrients. - Apply skills to assess on nutritional problems in community.

25	FT -304(b)	b)Nutritional Assessment	2017	<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups.
26	FT-401	Food Safety Standards and Quality Control	2017	<ul style="list-style-type: none"> - Gain knowledge in current rules and regulations of food safety standards and quality assurance. - Understand the insight quality evaluation of different foods by standard methods. - Develop skills for quality analysis and assurance of food quality.
27	FT-402	Food Product Development and Marketing	2017	<ul style="list-style-type: none"> - Elucidate the process of new food product development process to generate ideas, develop concept to test market and in food industry. - Acquire the skill to design and development of new food product and analyse the quality of the product. - Student able to design, demonstrate the skills in food process, organoleptic evaluation and nutritional label of food products as a team work.
28	FT-403	Nutrition for Health and Fitness/Project Work	2017	<ul style="list-style-type: none"> - Understand the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. - Describe the role of nutrients in physical performance, weight management, obesity and Energy metabolism pathways during physical activity. - Gain knowledge on concepts of physical activity, physical fitness and

				the importance of nutrients in Sports.
29	Practical-I	Food Safety standards and Product Development	2017	<ul style="list-style-type: none"> - Gain knowledge on subjective and objective evaluation methods of foods with safety and standards. - Exemplify various speciality food products and their applications, acquire the skill to design and development of new food product and analyse the quality of the product.
30	FT-404(a)	(a) Institutional food service management	2017	<ul style="list-style-type: none"> - Gain knowledge on principles of safe food preparation and cooking methods and service management
31	FT-404(b)	(b)Basic Food Engineering	2017	<ul style="list-style-type: none"> - Student understands the basic Principles, overview of processing techniques and methods of food. - Able to describe the types and properties of agro processing equipments like pasteurizer, spray drier and sealing equipments. - Enumerate processing equipments and maintenance of processing equipments
32	FT-404(c)	(c)Food Packaging	2017	<ul style="list-style-type: none"> - Enable the students to understand the regulations of packaging and packaging material testing. - Knowledge of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life. - Able to utilize some of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life.
33	FT- 405(a)	(a) Child Welfare	2017	<ul style="list-style-type: none"> - Understand the different developments like physical, cognitive,

		Programmes		<p>language and social development during childhood.</p> <ul style="list-style-type: none"> - Apply knowledge to understand normal development and developmental delays during childhood.
34	FT- 405(b)	(b)Disaster Management	2017	<ul style="list-style-type: none"> - Understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters;. - Illustrate the efforts made by the NGOs, Community based organizations and local administration in disaster management.

38. Mathematics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1.	MA 101	Algebra	2017	<ol style="list-style-type: none"> 1. Identify the concept of action and conjugation. 2. Analyze the maximal, prime, nilpotent and Nil ideals. 	
2.	MA 102	Real Analysis	2017	<ol style="list-style-type: none"> 1. Understand the concepts of Riemann Stieltjes integration and Differentiation. 2. Understand Uniform Convergence and continuity. 	

3.	MA 103	Ordinary Differential Equations	2017	Course outcomes: From this course students will be able to 1. Learn boundary value problems, Eigen values and Eigen functions	
4.	MA 104	Complex Analysis	2017	1. Decide when and where a given function is analytic . 2. Understand the Mobius Transformation. 3. Describe basic properties of complex integration and having the ability to compute such integrals.	
5.	MA 105	Computer Oriented Numerical Methods	2017	1. Apply numerical methods to obtain approximate solutions to mathematical problems. 2. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 3. Solve any numerical problem by using programming.	

6.	MA 106	Human Values and Professional Ethics-I	2017	<ol style="list-style-type: none"> 1. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study. 2. Understand human values . 3. Develop character, affection and love towards other human beings.
7.	MA 201	Galois Theory	2017	<ol style="list-style-type: none"> 1. Apply the knowledge on polynomials solvable by radicals, Extension field. 2. Understand the normal and separable extensions. 3. Study the roots of polynomials specially quintic polynomials which is the cause to develop Galois theory.
8.	MA 202	Partial Differential Equations	2017	<ol style="list-style-type: none"> 1. solve Pfaffian differential equations and find orthogonal trajectories of a curve. <ol style="list-style-type: none"> 1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve 2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.

9.	MA 203	Topology	2017	<ol style="list-style-type: none"> 1. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis. 2. Understand Topological Spaces, definition & examples. 3. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics. 4. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical 	
10.	MA 204	Advanced Complex Analysis	2017	<ol style="list-style-type: none"> 1. To learn Laurent Series-Singular Points. 2. Explain the basic properties of complex integration and compute such integrals. 3. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 4. Understand the Infinite product and Partial Fraction 	
11.	MA 205	Measure and Integration	2017	<ol style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 	

12.	MA 206	Human Values and Professional Ethics-II	2017	<ol style="list-style-type: none"> 1. Understand the fundamental responsibilities and respect towards women 2. Know the value of education. 3. Question the illegal practices in the medical and business fields. 4. Understand the value of ecological balance and act in 	
13.	MA 301	Commutative Algebra	2017	<p>To understand the ideals, Modules and operations on them.</p> <p>2.To learn the structures of composition series with ACC and DCC</p>	
14.	MA 302	Functional Analysis	2017	<ol style="list-style-type: none"> 1) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 2) Comprehend the Open mapping theorem and Closed graph theorem. 3) Construct orthonormal sets and conjugate spaces. 4) Understand the relevance of self-adjoint operators, normal, unitary operators and 	

15.	MA 303	Classical Mechanics	2017	<ol style="list-style-type: none"> 1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 2) Derive the Lagrange's Equation from Hamilton's Principle. 3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least 	
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16.	MA 304	A) Differential Geometry B)Cryptography C) Linear Algebra D) Discrete Mathematics	2017	1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. 1) Understand various Cryptographic Techniques. 2) Apply various public key cryptography techniques. 3) Understand the various Security Applications. 4) Implement system level security applications. 5) Be familiar with secure random bit generator and linear feedback shift register sequences. 6) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 7) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. Solve the system of linear equations 2 .Understand the concept of vector space, basis, dimension and linear Transformation	
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17.	MA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2017	<ol style="list-style-type: none"> 1. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 2. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 3. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 4. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 	
18.	MA 401	Number Theory	2017	<p>.</p> <ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 2. Understand the concepts of Limit, continuity & differentiation of functions. 3. Apply Integrals to find areas, length & volume of regions. 	

19.	MA 402	Banach Algebra	2017	<ol style="list-style-type: none"> 1. Understand different types of Banach Algebras with examples. 2. Know the essence of Gelfand mapping 3. Understand the Application of Commutative C*- algebras. 4. Derive the applications of Banach Algebra in analysis, Fourier series Boolean Algebras and other significant areas 	
20.	MA 403	Graph Theory	2017	<p>Able to define basic concepts of graphs</p> <ol style="list-style-type: none"> 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 	
21.	MA 404	A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research	2017	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <ol style="list-style-type: none"> 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 	

22.	MA 405	A) Theoretical Computer science B) Biomechanics	2017	<ul style="list-style-type: none"> 1) Know the Basic concepts of Metric spaces And Normed Linear space. 2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces. 3) Knows Bernstein's lethargy theorem and its practical and theoretical implications. 4) Be able to use and analyze the basic methods for polynomial approximations. 	
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APPLIED MATHEMATICS:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
23.	AMA101	METHODS OF APPLIED MATHEMATICS	2017	<ul style="list-style-type: none"> 1. Expand a function in a Fourier series and able to know under what conditions such an expansion is valid. 2. Aware of the connection between integral transforms (Fourier and Laplace) and be able to use the latter to solve mathematical problems relevant to the physical sciences. 3. Understand the applications of Sylow theorems. 	
24.	AMA 102	Real Analysis	2017	<ul style="list-style-type: none"> 5. Understand the concepts of Riemann Stieltjes integration and Differentiation. 6. Understand Uniform Convergence and continuity. 	

25.	AMA 103	Ordinary Differential Equations	2017	Course outcomes: From this course students will be able to 5. Learn boundary value problems, Eigen values and Eigen functions	
26.	AMA 104	Complex Analysis	2017	5. Decide when and where a given function is analytic . 6. Understand the Mobius Transformation. 7. Describe basic properties of complex integration and having the ability to compute such integrals.	
27.	AMA 105	Computer Oriented Numerical Methods	2017	4. Apply numerical methods to obtain approximate solutions to mathematical problems. 5. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 6. Solve any numerical problem by using programming.	

28.	AMA 106	Human Values and Professional Ethics-I	2017	<p>5. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study.</p> <p>6. Understand human values .</p> <p>7. Develop character, affection and love towards other human beings.</p>	
29.	AMA 202	Partial Differential Equations	2017	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p>	

30.	AMA 203	Topology	2017	<p>5. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis.</p> <p>6. Understand Topological Spaces, definition & examples.</p> <p>7. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics.</p> <p>8. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical</p>
31.	AMA 204	Advanced Complex Analysis	2017	<p>5. To learn Laurent Series-Singular Points.</p> <p>6. Explain the basic properties of complex integration and compute such integrals.</p> <p>7. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions.</p> <p>8. Understand the Infinite product and Partial Fraction</p>
32.	AMA 205	Measure and Integration	2017	<p>1. Compute Lebesgue measures.</p> <p>2. Compute Lebesgue integrals of bounded functions over a set of finite measure</p> <p>3. Solving the Differentiation and Integration of Monotone functions.</p>

33.	AMA 206	Human Values and Professional Ethics-II	2017	<p>6. Understand the fundamental responsibilities and respect towards women</p> <p>7. Know the value of education.</p> <p>8. Question the illegal practices in the medical and business fields.</p> <p>9. Understand the value of ecological balance and act in</p>	
34.	AMA301	CONTINUUM MECHANICS		<p>1) Be able to describe motion, deformation and forces in a continuum.</p> <p>2) Be able to derive equations of motion and conservation laws for a continuum.</p> <p>3) Understand constitutive models for fluids and viscoelastic solids.</p> <p>4) Formulate and solve specific technical problems of displacement, strain and stress.</p> <p>5) Perform experiments with stresses and deformations.</p> <p>6) Numerically model and analyse the stresses and</p>	

35.	AMA 302	Functional Analysis	2017	<p>5) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem.</p> <p>6) Comprehend the Open mapping theorem and Closed graph theorem.</p> <p>7) Construct orthonormal sets and conjugate spaces.</p> <p>8) Understand the relevance of self-adjoint operators, normal, unitary, operators, and</p>	
36.	AMA 303	Classical Mechanics	2017	<p>5) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation.</p> <p>6) Derive the Lagrange's Equation from Hamilton's Principle.</p> <p>7) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems.</p> <p>8) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least</p>	

37.	AMA 304	A) Differential Geometry B)Cryptography C) Linear Algebra D) Discrete Mathematics	2017	1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. 8) Understand various Cryptographic Techniques. 9) Apply various public key cryptography techniques. 10) Understand the various Security Applications. 11) Implement system level security applications. 12) Be familiar with secure random bit generator and linear feedback shift register sequences. 13) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 14) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. Solve the system of linear equations 2 .Understand the concept of vector space, basis, dimension and linear Transformation	
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38.	AMA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2017	<p>9. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems.</p> <p>10. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business.</p> <p>11. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts</p> <p>12. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems.</p> <p>13. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components.</p> <p>14. Understand the concepts of Limit, continuity & differentiation of functions.</p>	
39.	AMA 401	Number Theory	2017	<p>.</p> <p>5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components.</p> <p>6. Understand the concepts of Limit, continuity & differentiation of functions.</p> <p>7. Apply Integrals to find areas, length & volume of regions.</p>	

40.	AMA402	FLUID DYNAMICS	2017	<p>1) Be familiar with continuum model of fluid flow and classify fluid/flows based on physical properties of a fluid/flow along with Eulerian and Lagrangian descriptions of fluid motion.</p> <p>2) Derive and solve equation of continuity, equations of motion, vorticity equation, equation of moving boundary surface, pressure equation and equation of impulsive action for a moving inviscid fluid.</p>
41.	AMA 403	Graph Theory	2017	<p>Able to define basic concepts of graphs</p> <p>2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph.</p> <p>3. construct reliable communication network.</p>
42.	AMA 404	<p>A) Mathematical Statistics</p> <p>B) Approximation Theory</p> <p>C)Algebraic Coding Theory</p> <p>D)Operations Research</p>	2017	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <p>2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,.</p>

43.	AMA 405	A) Theoretical Computer science B) Biomechanics	2017	<p>5) Know the Basic concepts of Metric spaces And Normed Linear space.</p> <p>6) Knows existence and uniqueness theorems for the best approximations in various Banach spaces.</p> <p>7) Knows Bernstein's lethargy theorem and its practical and theoretical implications.</p> <p>8) Be able to use and analyze the basic methods for polynomial approximations</p>
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39. Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
MB-102	Enzymology & Microbial Physiology & Metabolism	2017	<p>Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration.</p> <p>Be able to know in depth about various pathways in protein and nucleotide metabolisms</p>
MB-105	Introductory Microbiology	2017	<p>Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their</p>

			applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
MB-106	Human Values and Professional Ethics – I	2017	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
MB-202	Medical Microbiology	2017	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
MB-204P	Practical – II Medical Microbiology	2017	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures. Be able to identify blood cell types.
MB-205	Basics of Virology	2017	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of

			<p>viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids.</p> <p>Classifying plants viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae</p>
MB-206	Human Values and Professional Ethics –II	2017	<p>Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients.</p> <p>Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions.</p> <p>Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.</p>
MB 302	Recombinant DNA technology	2017	<p>This course teaches rDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on</p>

	& Bioinformatics		the construction of cDNA libraries. Student of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering
MB 305	b) food microbiology	2017	Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms.
MB-306	b) Industrial food Microbiology	2017	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts
MB 405b	Bioprocess engineering	2017	After completing this course, the student will be able to define a bacterium, a fungus, a virus and archaea, give examples of structurally different microbes, and list microbes by their energy metabolism and carbon sources. The student will be able to evaluate the cultivation, enrichment and growth prevention methods for microbes. The student will be able to explain the roles of microbes in elemental cycles on Earth and, the waste decontamination methods based on microbial activities. He/she will be able to judge how microbes and enzymes could be applied in industry.
MB-406a	Fermentation	2017	The course aims to provide fundamental insights to exploit microbes for

	technology		manufacturing of products which have huge industrial significance. The course blends science and engineering with various biochemical processes to obtain products such as food, chemicals, vaccines, medicine . At the end of the course, the student will have a better appreciation for the role of microbes in industry using technology Able to design procedures, record research methodology and interpret the research
MB-406b	Pharmaceutical Microbiology	2017	This course prepares the students in appreciating the its benefits and applications in biotechnological, pharmaceutical, medical field.

INDUSTIAL MICROBIOLOGY:

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
IMB-102	Enzymology & Microbial Physiology & Metabolism	2017	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
IMB-105	Introductory Microbiology	2017	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the

			comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
IMB-106	Human Values and Professional Ethics – I	2017	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
IMB-202	Medical Microbiology	2017	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
IMB-204P	Practical – II Medical Microbiology	2017	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures. Be able to identify blood cell types.

IMB-205	Basics of Virology	2017	<p>Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids.</p> <p>Classifying plants viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae</p>
IMB-206	Human Values and Professional Ethics –II	2017	<p>Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients.</p> <p>Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions.</p> <p>Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.</p>
IMB 305	b) Bioprocess Engineering and	2017	<p>Give elaborate knowledge on Health care products.</p> <p>Provide in depth knowledge about microbial antibodies and recombinant products.</p>

	Technology		Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.
IMB-306	a) Industrial Biotechnology	2017	Be able to gain knowledge on strain improvement. Be able understand the whole broth processing. Gain knowledge on production of industrial products
	b)Immuno Technology and Human Health	2017	Immunology and Human Health is designed to advance your understanding of the Immune system and to apply this knowledge to basic immunological research of human diseases. The immune system is composed of numerous cells and molecules that act in concert to maintain health, to overcome infection, prevent tumour growth and repair damaged tissues. The study of the immune system provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (bacteria, viruses, protozoans and fungi). This subject provides a greater understanding of the complexity of the immune system and its responses to stresses such as infection. It demonstrates how modulation, or activation, of the immune system can either help overcome infection or may lead to autoimmune disease. Understanding the immune system gives us the potential to develop therapies to control events such as infection or autoimmune conditions. This subject helps students expand their understanding of current concepts in immunology and the potential application of applied immunology in medicine, research and industry.
IMB-404	Field Trip/ Industrial Tour	2017	Able to design procedures, record research methodology and interpret the research Able to design procedures,

	Report / Dissertation		record research methodology and interpret the research
IMB-405	a) Biostatistics & Bioinformatics	2017	<p>Be able to gain knowledge on basic concepts in statistics.</p> <p>Be able to design the experimental and statistical basics of biological assays.</p> <p>Be able to give familiarize with microbial genomes</p> <p>Be able to acquaint themselves with metagenomics</p> <p>Be able to learn basics of protein identification method</p> <p>Be able to gain knowledge on drug discovery</p>
IMB-406	a) Microbes in Human Welfare	2017	<p>Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.</p>
	b) Medical and Diagnostic	2017	Describe the aetiologies, epidemiology and basic mechanisms of pathogenesis of infectious diseases.

	Microbiology		<p>Describe the basic principles of diagnosis, antimicrobial treatment, prevention and control of infectious diseases in the hospital and community.</p> <p>Describe the host immune system and explain the host response to infection</p> <p>Understand and interpret basic laboratory tests for the diagnosis of infectious diseases.</p> <p>Apply the principles of molecular and immunological techniques for the diagnosis of infectious diseases.</p> <p>Analyze and solve case studies involving bacterial and fungal agents</p>
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40. Physics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1.	PHY 101	Classical Mechanics and Statistical Mechanics	2017	<ol style="list-style-type: none"> Understanding the Lagrangian and Hamiltonian mechanics and solving the related problems. Learn the concepts of Poisson brackets, Hamilton-Jacobi equations and action angle variables. Learn different ensembles and partition functions in statistical mechanics and their applications. 	

2.	PHY 102	Analog and Digital Electronics	2017	<p>1. Utilize the basic knowledge in Electronics and Communication Engineering field.</p> <p>2. Understand the design and working of BJT/FET/ MOSFETs based electronic circuits and perceive the effect of positive feedback on working of Op-Amps based Oscillators.</p> <p>3. Develop the skills to design and analyze analog and digital</p>
3.	PHY 103	General Physics lab 1	2017	<p>Understand the laws related to electrostatics and magnetostatics and also light propagation.</p> <p>2. Understand the basics of atomic physics.</p> <p>3. Understand the Zeeman effect , Paschen-Back effect and Stark effects in detail.</p> <p>4. Know the importance of Rotational and Vibrational spectra</p>
4.	PHY 104	Electronics lab 1	2017	<p>1. Understand the core values that shape the ethical behaviour in various professions.</p> <p>2. Expose awareness on professional ethics and human values.</p> <p>3. Get awareness on the importance of spirituality.</p>
5.	PHY 105	Electro magnetic theory, Atomic and Molecular Physics	2017	<p>Determining the value of Planck's constant and Seebeck coefficient of a thermocouple, and also determination of wavelength.</p> <p>2. Learn structural determination using X-ray diffraction method.</p> <p>3. Improve demonstration of skills related to the said experiments in Physics</p>

6.	PHY 106	Human values & Professional Ethics-I	2017	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Set up testing strategies and select proper instruments to evaluate the performance characteristics of the electronic circuit. 3. Choose testing and experimental procedures on different types
7.	PHY 201	Lasers and Modern optics	2017	<ol style="list-style-type: none"> Understand the properties of lasers and various applications in different fields. 2. Know the importance of non linearity in physics problems and solutions. 3. Understand the principles and different types of holography; and its applications
8.	PHY 202	Mathematical Physics	2017	<ol style="list-style-type: none"> Understand and apply the mathematical skills to solve quantitative problems in physics. 2. Apply Laplace and Fourier transforms in solving different problems of mechanics, electronics etc. 3. Solve different physical problems related to partial differential
9.	PHY 203	General Physics lab 2	2017	<ol style="list-style-type: none"> Understand different bonds in solids, importance of lattice vibrations, their models and elastic properties. 2. Explain electronic properties of solids in classical, quantum and the nearly free electron model. 3. Able to classify materials as metals, insulators and semiconductors and sketch the band diagram for each

10.	PHY 204	Electronics lab 2	2017	<p>1. Understand the issues which will help to sensitize students to be broader towards the social, cultural, economic and human issues, involved in social changes</p> <p>2. Know the nature of the individual and the relationship between the self and the community</p> <p>3. Understanding major ideas, values, beliefs, and experiences</p>
11.	PHY 205	Solid State Physics	2017	<p>1. Lasers and its slit width calculation and refractive index measurement, Young's modulus finding through interference and Stefan's constant calculation</p> <p>2. Intensity variation of light, photo transistor working, absorption and decay of nuclear radiation</p>
12.	PHY 206	Human values & Professional Ethics-II	2017	<p>1. Identify relevant information to supplement the Analog Electronic Circuits.</p> <p>2. Set up testing strategies and select proper instruments to evaluate the performance characteristics of the electronic circuit.</p> <p>3. Choose testing and experimental procedures on different types</p>

13.	PHY 301	Quantum Mechanics – I	2017	<ol style="list-style-type: none"> 1. Solve the problems in quantum mechanics using Schrodinger's equation and Dirac representation. 2. Grasp the importance of quantum dynamics in solving the problems.
14.	PHY 302	Physics of semiconductor devices	2017	<ol style="list-style-type: none"> 1. Classify different diodes and its importance in different applications. 2. Understand the basic principles of diodes .
15.	PHY 303	<ol style="list-style-type: none"> a. Applied spectroscopy b. condensed matter physics c. electronics embedded systems 	2017	<ol style="list-style-type: none"> 1. Understand the molecular structure. 2. Know the importance of various molecular transitions and also about rotational, vibrational and Raman spectra of molecules. 3. Understand the instrumentation techniques that are used in different regions of spectra. 4. Familiar with fluorescence and phosphorescence spectroscopy and their applications. <ol style="list-style-type: none"> 1. Learn the various crystal growth techniques and their importance, and also to analyze the defects 2. Know the different dielectric properties and methods to study dielectrics behavior. 3. Differentiate between ferroelectric, anti-ferroelectric, piezoelectric and pyroelectric materials. 4. Understand excitons, photoconductivity, types of

16.	PHY 304	Elective A Elective B Elective C	2017	<p>1. Learn the concept of lasers and their applications...</p> <p>2. Understand the fundamental properties of lasers and laser systems</p> <p>3. Know about the different optoelectronic devices and their behavior.</p> <p>4. Aware of wide variety of applications of opto-electronic components.</p> <p>1. Understand the fundamentals of solar energy, particularly the thermal energy component.</p> <p>2. Acquire knowledge on solar radiation measurement techniques and procedures.</p> <p>3. Demonstrate skills related collector performance analysis</p>
17.	PHY 305	Elective	2017	
18.		A) Applied Spectroscopy-I	2017	<p>1. Gain experience with some statistics to analyse data in laboratory.</p> <p>2. Handle the spectrophotometers and could analyse the data.</p> <p>3. Identify the compounds based on qualitative analysis.</p>
19.		B) Condensed Matter Physics-I	2017	<p>1. Minority charge carrier current in calculation of band gap</p> <p>2. Analysis of magnetic materials in terms of coercivity and saturation magnetization,</p> <p>3. Creep importance in materials characteristics analysis</p> <p>4. Transition temperature determination by finding dielectric</p>

20.		C) Electronics-embedded systems	2017	1. Define the arithmetical and logical assembly language for microcontroller PIC 16F877A 2. Know the downloading procedure on hardware into flash ROM of PIC 16F877A	
21.	PHY 306	A) Computational methods and Programming	2017	1. Demonstrate both the theory and experiments related to propagation and modulation of light 2. Learn the optical fibre working 3. Design the Hologram	
22.		B)Energy Harvesting Systems	2017	1. Demonstrate the skills related to measurement of direct, diffuse and global solar radiation. 2.Understand the working of a solar cell and its efficiency measurement 3. Verifv the influence of different parameters on the solar cell	
23.		C) Thin Films Physics	2017	1. Understand the working of rotary and diffusion pumps. 2 Determine the thermos emf of any semiconductors. 3 Study the characteristics of any solar cells. 4 Demonstrate the skill acquired in connection with thin film	
24.	PHY 307	Computational Methods and Programming	2017	1. Write a C programme for analytical problems, algorithms for numerical problems and execute them. 2. Solve many problems including algebraic/transcendal equations, simultaneous equations, boundary value problems, data analysis, numerical differentiation and	

25.	PHY 307(a)	ENERGY HARVESTING SYSTEMS	2017	<ol style="list-style-type: none"> 1. Gain knowledge on energy sources and economic development. 2. Understand the energy flow diagram and environmental 	
26.	PHY 401	Quantum Mechanics - II	2017	<ol style="list-style-type: none"> 1. Learn distinguishability and indistinguishability of identical particles, construct symmetric and anti symmetric wave functions. 2. Grasp the concepts of spin and angular momentum as well as their quantization and addition rules. 	
27.	PHY 402	Advances in Physics	2017	<ol style="list-style-type: none"> 1. Understand the synthesis of nanomaterials, their application and impact on the environment. 2. Acquire the knowledge about MEMS and their applications. 3. Learn the basics of remote sensing, different payloads, sensors and satellite systems. 	

28.	PHY 403	Elective A Elective B Elective C	2017	<ol style="list-style-type: none"> 1. Have the knowledge on crystal field theory and the effect of weak crystal field on S, P, D and F terms. 2. Understand the importance of rare earth doped materials and able to evaluate various laser parameters. 3. Know the instrumentation techniques used in various spectrophotometers and uses of various detectors. 4. Acquire the knowledge on two photon spectroscopy. <ol style="list-style-type: none"> 1. Learn the relation between stress and strain and gain knowledge on elastic constants and velocity of elastic waves. 2. Understand the classical and quantum theories of specific heat and also about Gruneisen parameter and lattice thermal conductivity. 3. Know the theories of different bands and experimental determination of Fermi surface. 	
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29.	PHY 404	Project work- Elective A Elective B Elective C	2017	<ol style="list-style-type: none"> 1. Learn the basics of fibre optic components, sensors and their applications. 2. Select appropriate fiber optic components for communication. 3. Understand the different components involved in optical signal processing. 4. Demonstrate their skills related to lasers, fiber optics, photonic and opto-electronic devices. <ol style="list-style-type: none"> 1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience. 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications
30.	PHY 405	Elective A) Applied Spectroscopy-II	2017	<ol style="list-style-type: none"> 1. Use standardized material to determine an unknown concentration. 2. Handle the spectrophotometers and could analyse the data.
31.		B) Condensed Matter Physics-II	2017	<ol style="list-style-type: none"> 1. Magnetic susceptibility determination, liquid crystal phases with temperature. 2. working of temperature sensor, heat capacity calculation.

32.		C) Electronics-Wireless communications	2017	<ol style="list-style-type: none"> 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Gain hands on experience and will be able to envisage the concepts more clearly. 	
33.	PHY 406		2017	<ol style="list-style-type: none"> 1. Get the experience on literature collection 2. Get the experience on selection of a problem independently related to recent work 3. Able to plan and execute the problem 	
34.		A)Analytical techniques and Nuclear Physics	2017	<ol style="list-style-type: none"> 1. Learn the basics and applications of analytical techniques. 2. Gain knowledge related to various spectroscopic techniques. 3. Get advanced knowledge in nuclear interactions in nuclear physics 	
35.		B) Nanomaterials and devices	2017	<ol style="list-style-type: none"> 1. Understand the classification of nano materials. 2. Know different synthesis methods to grow variety of nanostructures. 3. Describe allotropic forms of carbon and to understand 	

41. Psychology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	PSY 101	General Psychology-I	2017	<ul style="list-style-type: none"> To understand the concepts and scope of psychology To comprehend the biological basis of behavior To study the perception and learning theories
2	PSY 102	Social Psychology	2017	<ul style="list-style-type: none"> To understand the concepts of social psychology To comprehend the social perception and cognition. To study the socialization and attitudes
3	PSY 103	Psychopathology-I	2017	<ul style="list-style-type: none"> To understand the abnormal behavior and historical and current trends To comprehend the models of abnormal behaviour and approaches to therapies
4.	PSY 104	Psychological Measurements-I	2017	<ul style="list-style-type: none"> To understand the psychological measurements To comprehend the development of psychological tests and principles of test construction.
5	PSY 105P	Practical-I&II	2017	<ul style="list-style-type: none"> To understand the knowledge about psychological assessment To analyze the observed and the collected data to prove the theoretical
6.	PSY-106	Human Values and Professional	2017	

		Ethics-I		
7.	PSY 201	General Psychology-II	2017	<ul style="list-style-type: none"> • To understand fundamentals of motivation and emotion • To understand basic concepts of memory and forgetting • To comprehend the thinking, intelligence and personality of individuals
8.	PSY 202	Applied Social Psychology	2017	<ul style="list-style-type: none"> • To understand the Social Influence, Social Exchange Process in social behaviour. • To comprehend the Prejudice and Discrimination and group and individuals.
9.	PSY 203	Psychopathology-II	2017	<ul style="list-style-type: none"> • To understand anxiety and mood disorders and somatic disorders. • To study Psychosis and Cognitive Disorders across life span
10.	PSY 204a	Psychological Measurements & Statistics	2017	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
	PSY 204b	Research Methodology	2017	<ul style="list-style-type: none"> • To get knowledge of psychological tests and their use in diagnosis. • To make students able to diagnose patients with the

				<p>help of projective tests.</p> <ul style="list-style-type: none"> • To get understanding of different diagnostic systems. • Learn how to take case history of patients. • To be able to make differential diagnosis.
	PSY 204c	Computer Applications in Psychological Research	2017	<ul style="list-style-type: none"> • To understand the basic components of computer and working in Ms Office, power point and internet services. • To comprehend the application of computer knowledge through creating emails, scientific journals and data scoring
11	PSY 205P	Practical - I & II	2017	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
12	PSY 206	Human values and Professional Ethics-II	2017	
13	PSY 301	Lifespan Developmental Psychology - Infancy to Adolescence	2017	<ul style="list-style-type: none"> • To understand the scope of life span development of infancy and babyhood • To comprehend the Early and Late Childhood and Adolescence.
14.	PSY 302	Personality	2017	<ul style="list-style-type: none"> • To introduce nature of personality.

				<ul style="list-style-type: none"> • To help determinants and development. To understand the Assessment of personality
15	PSY 303	Counseling Psychology-I	2017	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and techniques
16	PSY 304a	School Psychology	2017	<ul style="list-style-type: none"> • To introduce nature of school psychology • To help children with emotional, social, and academic issues. • To collaborate with parents, teachers, and students to promote a healthy learning environment.
	PSY 304b	Organizational Behaviour and HRM	2017	<ul style="list-style-type: none"> • To understand organization and the Individual differences • To comprehend the motivation and leadership To study the decision making and organizational effectiveness.
	PSY 304c	Health Psychology	2017	<ul style="list-style-type: none"> • To understand the need of Health psychology and various models related to health and illness. To comprehend the health behaviour enhancement and management
	PSY 304d	Psychology of Disability	2017	<ul style="list-style-type: none"> • To understand historical development – Models of

				<p>disabilities in the past and present scenario</p> <p>To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups</p>
17	PSY 305P	Practical - I & II	2017	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
18	PSY 306	Personality Development (OE)	2017	<ul style="list-style-type: none"> • To study the biological, psychological and socio cultural determinants & Soft Skills • To help determinants and development. • To understand the Assessment of personality
19	PSY 401	Lifespan Developmental Psychology – Adulthood and Later Maturity	2017	<ul style="list-style-type: none"> • To understand the scope of life span development of Adulthood and Later Maturity. • To comprehend the Adulthood and Later Maturity.
20	PSY 402	Theories of Personality	2017	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. • To understand the Assessment of personality
21	PSY 403	Counseling Psychology - II	2017	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and techniques
22	PSY 404a	Psychology of Aging – Applied	2017	<ul style="list-style-type: none"> • To study and understand the aging from maturity to

		Aspects		<p>old age.</p> <ul style="list-style-type: none"> • A form of discrimination against older adults based on their age. • To notice gerontology and issues
	PSY 404b	Consumer Behaviour and Marketing	2017	<ul style="list-style-type: none"> • To understand concept of consumer behaviour and market research • To comprehend the economic, social and psychological theory of buying motives. • To study the effect of advertising, sales promotion, branding and packaging
	PSY 404c	Rehabilitation Psychology	2017	<ul style="list-style-type: none"> • To understand historical development – Models of disabilities in the past and present scenario • To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
23	PSY 405P	Practical I & II	2017	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
24	PSY 406	Life Skills (OE)	2017	<ul style="list-style-type: none"> • To learn the concept of life skills and its importance in relation to personality development of an individual.

				<ul style="list-style-type: none"> To become aware of the components of life skills and the method of imparting knowledge of life skills.
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COUNSELLING PSYCHOLOGY:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1.	PSY 101	General Psychology-I	2017	<ol style="list-style-type: none"> Understood the concepts and scope of psychology Comprehended the biological basis of behavior Studied the perception and sensation 	
2.	PSY 102	Social Psychology	2017	<ol style="list-style-type: none"> Understood the concepts of social psychology Comprehended the social perception and cognition. Studied the Socialization 	
3.	PSY 103	Psychopathology-I	2017	<ol style="list-style-type: none"> Understood the meaning abnormal behavior and historical and current trends Comprehended the models of abnormal behaviour and approaches to therapies Learned about classification and assessment of abnormal behaviour 	

4.	PSY 104	Psychological Measurements-I	2017	<ol style="list-style-type: none"> 1. Understood the assessment and psychological measurements 2. Comprehended the development of psychological tests and principles of test construction. 3. Learned the Principles of Test Construction
5.	PSY 201	General Psychology-II	2017	<ol style="list-style-type: none"> 1. The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting
6.	PSY 202	Applied Social Psychology	2017	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and
7.	PSY 203	Psychopathology-II	2017	<ol style="list-style-type: none"> a. Understood anxiety and mood disorders b. Acquainted with somatic disorders. c. Studied Psychosis and Cognitive Disorders d. Understood Psychological Disorders Across the Life

8.	PSY 204	a. Psychological Measurements & Statistics b. Research Methodology c. Computer Applications in Psychological Research	2017	<ol style="list-style-type: none"> 1. The students acquainted with intelligence and achievement tests 2. The students learned the measurement of personality tests 3. They are clear in understanding the Statistics for Psychological Measurement 4. They have knowledge on Distribution of Scores on Variables <ol style="list-style-type: none"> 1. Understood basic research and applied research including experimental research. 2. The students comprehended the problem & hypothesis 3. Gained knowledge on Sampling & Data Collection 4. Understood the application of research designs 	
9.	CPSY 301	Counselling Process	2017	<ol style="list-style-type: none"> 1. Understood the basic components of computer 1. Understood the counseling as helping profession 2. To acquire the relation with other helping professions 3. To know the legal and ethical issues 	

10.	CPSY 302	Counselling Skills	2017	<ol style="list-style-type: none"> 1. Understood the micro-skills of counseling through a series of practices. 2. Got an idea about who to understand the people and interpret their feelings with positive appreciation 3. To provide a space where participants can grow, in the sense of allowing an encounter with them first and based on this encounter to achieve a better understanding of how they impact on other people.
11.	CPSY 303	Therapeutic Approaches in Counselling –I	2017	<ol style="list-style-type: none"> 1. Understood the various Therapeutic Approaches of counseling. 2. Understood the techniques relevant to therapies. 3. To acquires the basic procedures.
12.	CPSY 304A	a. Foundations of Personality	2017	<ol style="list-style-type: none"> 1. Understood nature of personality. 2. Realized the determinants of personality 3. Found that the development of Personality.
13.	CPSY 304B	b. Lifespan Developmental Psychology – Infancy to Adolescence	2017	<ol style="list-style-type: none"> 1. Exposed the students to the basics of human development 2. Helped the student understand the stages of development 3. Understood the biological, social and emotional development

14.	CPSY 304C	c. Psychology of Disability	2017	<ol style="list-style-type: none"> 1. Understood the historical development and models of disabilities 2. Acquire the knowledge of assessment of disability. 3. Expertised on handling the disabled Behavior 4. Collected the knowledge about various service organizations
15.	CPSY 305	Practical I & II	2017	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills
16.	CPSY 401	Applications of Counselling in Special Areas	2017	<ol style="list-style-type: none"> 1. Understood how to handle the client with various problems and hailing into different age groups. 2. Learned how to handle the clients with specific problems 3. To attained what is career, personal, vocational and other applied areas of counseling 4. Gained how to organize Counseling programs to handle
17.	CPSY 402	Therapeutic Approaches in Counselling –II	2017	<ol style="list-style-type: none"> 1. Understood the therapeutic approaches of counseling 2. Improve the major skills in therapeutic techniques 3. Gained specific methods involved in therapy 4. Adopted the different psycho therapeutic models of

18.	CPSY 403	Family Counselling	2017	<ol style="list-style-type: none"> 1. Understand the need and importance of family counseling. 2. Improved how to handle the family issues 3. To maximized use of tools in counseling
19.	CPSY 404A	a. Theories of Personality	2017	<ol style="list-style-type: none"> 1. Understood the Psychoanalytic Approach 2. Learned on behavioural approaches to personality. 3. The students comprehended the Humanistic approach 4. The students acquainted with the eastern theories of
20.	CPSY 404B	b. Lifespan Developmental Psychology – Adulthood and Later Maturity	2017	<ol style="list-style-type: none"> 1. Understood about adult hood 2. Aware of infancy late adult hood problems 3. Identified the early and late old age issues.
21.	CPSY 404C	c. Rehabilitation Psychology	2017	<ol style="list-style-type: none"> 1. The students understood historical development – Models of disabilities in the past and present scenario 2. The students comprehended Assessment of Disability, Psychological Aspects 3. The students are aware of Behavioral Management
22.	CPSY 405	Practical I & II	2017	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills.

42. Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
23.	ST - 101	Linear Algebra	2017	<ol style="list-style-type: none"> 1. Students understood for estimation of elementary transformations in matrix and their solutions. 2. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 3. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 4. Combine methods of matrix algebra to compose the 	
24.	ST - 102	Probability Theory	2017	<ol style="list-style-type: none"> 1. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 2. Students also know the weak law, strong law and central limit theorem and their importance. 3. Students get the knowledge of the Central limit theorem and their real life uses. 	

25.	ST - 103	Distribution Theory	2017	<ol style="list-style-type: none"> 1. Students know about different continuous and discrete distributions and their properties. 2. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 3. Students get the knowledge of the statistical Tests and their real life uses and applications. 4. Students get the knowledge of Regression and
26.	ST - 104	Practical-I (75 Practical + 25 Record)	2017	<ol style="list-style-type: none"> 1. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 2. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction.
27.	ST - 105	Statistical Computing	2017	<ol style="list-style-type: none"> 1. Students get the basic Programming Skills of C and C++. 2. Students learnt how the Data enter in the Excel with Headings. 3. Students get the knowledge of creating data ase using the MS-Access.

28.	ST - 106	Human Values and Professional Ethics-I	2017	<ol style="list-style-type: none"> 1. Students get the knowledge of the Ethical values. 2. Students get the idea about the Value education. 3. Students learn how to behave in Society. 4. Students get the knowledge of the Bhagavat Geetha and
29.	ST - 201	Statistical Inference	2017	<ol style="list-style-type: none"> 1. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 2. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 3. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test).
30.	ST - 202	Multivariate Analysis	2017	<ol style="list-style-type: none"> 1. Students learnt about importance of multivariate variables and their distributions 2. T^2, D^2, MANOVA models are understood and know it's importance. 3. Implement dimension reduction techniques using software on real life problems.

31.	ST-203 A & B & C	<p>(a) Linear Models and Applied Regression Analysis</p> <p>(b) Stochastic Processes</p> <p>(c) Mathematical Analysis</p>	2017	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 1. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 2. They know R^2, adjusted R^2 and C_p criteria for model selection. 3. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 1. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 2. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 3. Understand the consequences of the Intermediate value theorem for continuous function. 4. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of 	
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32.	ST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2017	<ol style="list-style-type: none"> 1. Students know about the solving of Numerical problems related to Multivariate data. 2. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data. 3. They can also use the statistical tools and techniques for analyzing the statistical data.
33.	ST - 205	Sampling Techniques	2017	<ol style="list-style-type: none"> 1. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models. 2. Students studied non-Sampling errors and different remedies. 3. Implement Cluster sampling, Ratio and Regression estimation in real life problems
34.	ST - 206	Human Values and Professional Ethics-II	2017	<ol style="list-style-type: none"> 1. Students get the Knowledge of Status of Women in the family and society. 2. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners. 3. Students get the idea about the environmental Ethics. 4. Students Get the knowledge of Human Rights

35.	ST - 301	Econometric Methods	2017	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model.
36.	ST - 302	Design and Analysis of Experiments	2017	<ol style="list-style-type: none"> 1. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 2. Students understood about Latin squares and their construction, missing plot technique etc. 3. Students explained about Incomplete Block Designs and their analysis, etc.
37.	ST -303	Operations Research-I	2017	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way.

38.	ST -304	Practical-III (75 Practical + 25 Record)	2017	<p>Students can understand the Statical Methos in Economical Views.</p> <p>Students solved the Numerical problems related to operations research.</p> <p>Students Understand the Life Tables in Demography.</p>
39.	ST-305A	(a)Bio-Statistics	2017	<p>Students can understand how the statistics use in biological</p> <ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models.
40.	ST - 306	(a) Statistics for Biological and Earth Sciences	2017	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students used Advanced statistics tools with working

41.	ST - 401	Time Series Analysis and Forecasting Methods	2017	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. 	
42.	ST - 402	Demography and Official Statistics	2017	<ol style="list-style-type: none"> 1. Students know the growth rates, life tables, GRR, NRR and growth models. 2. Students understood about gene frequencies, genotypes, phenotypes etc. 3. Students learnt about population census methods, organizations in India and their functions. 4. Useful to students as a means of analyzing and predicting 	

43.	ST - 403	Operations Research-II	2017	<ol style="list-style-type: none"> 1. To perform Dynamic programming and their applications and computation procedure with illustration. 2. To discuss different Queuing models steady state solutions with examples. 3. To explain Inventory models with and without shortages, S-splicy, EOQ estimation with simple examples. <p>To understand Replacement problems such as block and age</p>	
44.	ST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2017	<p>replacement problems, individual and group replacement policies</p> <ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects 	

45.	ST-405 A	(a) Statistical Process and Quality Control	2017	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 	
46.	ST-405 B	Statistics for research, industry and Communitydevelopment	2017	<ol style="list-style-type: none"> 1. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 2. Students can understand the basic of research blooms taxonomy of learning levels. 3. Find the topic from current research in statistics education 	

47.	ST-405 C	Advanced Econometric Models	2017	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed probit, logit models and their estimation. <p>Students can understand the qualitative and limited dependent</p>	
48.	ST - 406 A	Business Analytics	2017	<ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students studied basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students performed advanced statistics tools for solving the problems. 	

49.	ST-406 B	(b) Survival Analysis	2017	<ol style="list-style-type: none"> 1. Students learnt about survival functions, their estimating methods, Distributions and their comparison for survival distributions. 2. Understand the elements of reliability, hazard function and its applications. 3. Understand the concept of censoring, life distributions 	
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Applied Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant
1. 1	APST - 101	Linear Algebra	2017	<ol style="list-style-type: none"> 5. Students understood for estimation of elementary transformations in matrix and their solutions. 6. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 7. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 8. Combine methods of matrix algebra to compose the 	

2.	APST - 102	Probability Theory	2017	<p>4. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary.</p> <p>5. Students also know the weak law, strong law and central limit theorem and their importance.</p> <p>6. Students get the knowledge of the Central limit theorem and their real life uses.</p>
3.	APST - 103	Distribution Theory	2017	<p>5. Students know about different continuous and discrete distributions and their properties.</p> <p>6. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients.</p> <p>7. Students get the knowledge of the statistical Tests and their real life uses and applications.</p> <p>8. Students get the knowledge of Regression and</p>
4.	APST - 104	Practical-I (75 Practical + 25 Record)	2017	<p>4. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers.</p> <p>5. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction.</p>

5.	APST - 105	Statistical Computing	2017	<p>4. Students get the basic Programming Skills of C and C++.</p> <p>5. Students learnt how the Data enter in the Excel with Headings.</p> <p>6. Students get the knowledge of creating data ase using the MS-Access.</p>
6.	APST - 106	Human Values and Professional Ethics-I	2017	<p>5. Students get the knowledge of the Ethical values.</p> <p>6. Students get the idea about the Value education.</p> <p>7. Students learn how to behave in Society.</p> <p>8. Students get the knowledge of the Bhagavat Geetha and</p>
7.	APST - 201	Statistical Inference	2017	<p>4. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary.</p> <p>5. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions.</p> <p>6. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test)</p>

8.	APST - 202	Multivariate Analysis	2017	<ol style="list-style-type: none">4. Students learnt about importance of multivariate variables and their distributions5. T^2, D^2, MANOVA models are understood and know it's importance.6. Implement dimension reduction techniques using software on real life problems.	
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9.	APST-203 & B & C	A(a) Linear Models and Applied Regression Analysis (b) Stochastic Processes (c) Mathematical Analysis	2017	A. Linear Models and Applied Regression Analysis 4. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 5. They know R^2 , adjusted R^2 and C_p criteria for model selection. 6. They will get the knowledge of building and fitting linear regression models with software. They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models. (b) Stochastic Processes 5. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 6. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 7. Understand the consequences of the Intermediate value theorem for continuous function. 8. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of	
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10.	APST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2017	<p>4. Students know about the solving of Numerical problems related to Multivariate data.</p> <p>5. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data.</p> <p>6. They can also use the statistical tools and techniques for analyzing the statistical data.</p>
11.	APST - 205	Sampling Techniques	2017	<p>5. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models.</p> <p>6. Students studied non-Sampling errors and different remedies.</p> <p>7. Implement Cluster sampling, Ratio and Regression estimation in real life problems</p>
12.	APST - 206	Human Values and Professional Ethics-II	2017	<p>5. Students get the Knowledge of Status of Women in the family and society.</p> <p>6. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners.</p> <p>7. Students get the idea about the environmental Ethics.</p> <p>8. Students Get the knowledge of Human Rights</p>

13.	APST - 301	Applied Econometrics	2017	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model.
14.	APST - 302	Experimental Design and Applications	2017	<p>Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests.</p> <p>Students understood about Latin squares and their construction, missing plot technique etc.</p> <p>Students explained about Incomplete Block Designs and their analysis, etc.</p> <p>Understand the basic terms used in design of experiments by</p>
15.	APST -303	Applied Operations Research	2017	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the

16.	APST -304	Practical	2017	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography.
17.	APST-305A	(a)Bio-Statistics	2017	<ol style="list-style-type: none"> 5. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 6. Describe single and multi-species population growth models.
18.	APST - 306	(a) Statistics for Biological and Earth Sciences	2017	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 5. Students learnt about Graphs, measures of averages, measures of dispersion etc. 6. Students understood about Basic probability and important distributions with workout examples. 7. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 8. Students used Advanced statistics tools with working

19.	APST - 401	Applied Forecasting Methods	2017	<ol style="list-style-type: none"> 1. 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc.
20.	APST - 402	Applied Demography and Official Statistics	2017	<ol style="list-style-type: none"> 5. Students know the growth rates, life tables, GRR, NRR and growth models. 6. Students understood about gene frequencies, genotypes, phenotypes etc. 7. Students learnt about population census methods, organizations in India and their functions. 8. Useful to students as a means of analyzing and predicting
21.	APST - 403	Reliability Theory & Survival Analysis	2017	<ol style="list-style-type: none"> 1. Students learnt about and survival analysis with their related distributions, relationships, non-parametric methods for computing survival analysis. 2. Estimate nonparametric survival function of the data. 3. Explain test of exponentiality against nonparametric classes, two sample problems. <p>Understand the elements of reliability, hazard function and its applications</p>

22.	APST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2017	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects.
23.	APST-405 A	(a) Statistical Process and Quality Control	2017	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems.
24.	APST-405 B	Statistics for research, industry and Communitydevelopment	2017	<ol style="list-style-type: none"> 5. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 6. Students can understand the basic of research blooms taxonomy of learning levels. 7. Find the topic from current research in statistics education.

25.	APST-405 C	Actuarial Statistics	2017	<ol style="list-style-type: none"> 1. Students get the knowledge of the Economic interest rates and discount rates. 2. Students know how to construct the life tables based on the Expectancy. 3. Students to get awareness of the life annuities. 4. Students ensure how to build joint life annuities and life survivor annuities. 	
26.	APST - 406 A	Statistics for Marketing Research	2017	<ol style="list-style-type: none"> 1. Students learnt about Research design and how to frame questionnaire etc. 2. Statistics relating to research like univariate test like Z, t, F, ANOVA, CRD, RBD and LSD are done. 3. Multivariate statistical techniques like factor analysis, dissemination analysis and cluster analysis are used. 4. Students can understand how the marketing is happening in the real life. 	

27.	APST-406 B	(b) Statistical analysis using SPSS	2017	<ol style="list-style-type: none"> 1. Able to create and manipulate vectors, matrices, arrays, data frames and lists. 2. Should be able to work with character data, factor data and dates. 3. Able to write scripts and function in R and read data from .csv files, EXCEL files and SPSS files.
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43. Virology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	VR-101	General Microbiology	2017	<ul style="list-style-type: none"> - To learn about fundamentals aspects of microbiology including origin, evolution of microorganisms, different groups of microorganisms and their importance, microscopy principles and applications, morphology, and structure of bacteria, - To learn about Microbiological media, isolation, cultivation and enumeration methods of microorganisms, microbial growth characteristics, maintenance, and preservation of microbial cultures. - To develop knowledge on microbial taxonomy, transport of nutrients in microbes, control strategies of microorganism,

				<ul style="list-style-type: none"> - To develop knowledge on general characteristics, structure and reproduction of fungi, algae, and protozoan parasites.
2	VR-102	General Virology	2017	<ul style="list-style-type: none"> - Learn the discovery, nature, origin and evolution of viruses and the physical, biochemical, and biological properties of viruses, criteria used for nomenclature and classification of bacteria, plant and animal viruses. - Describe the methods used for isolation, cultivation, and purification of viruses and criteria of purity. - Define biological, physical, biochemical, and serological methods used for quantitation of viruses, major characteristics of important plant and animal virus families and biology and applications of major RNA and DNA viruses of insects. - Understand the biology of major bacteriophages, algal and fungal viruses, subviral agents and importance of viruses in human welfare with suitable examples.
3	VR-103	General	2017	<ul style="list-style-type: none"> - Define laboratory safety measures that needs to be followed in

		Microbiology and Virology		<p>Virology and Microbiology laboratories and know the concepts and protocols of using different sterilization methods and preparation of media.</p> <ul style="list-style-type: none"> - Acquire the practical skills to use various methods for cultivation, staining and characterization of different microorganisms and to check their stability under various conditions. - Learn to isolate bacteriophages from different sources and cultivate viruses in embryonated eggs and plants. - Demonstrate the mechanical, aphid and graft transmission of plant viruses and methods used to check the stability of viruses and determine the effect of virus infection on plants through chlorophyll estimation.
4	VR-104	Biological Chemistry and Analytical Techniques	2017	<ul style="list-style-type: none"> - : Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of proteins, carbohydrates, lipids, and nucleic acids. - Know how to isolate and check the activity of enzymes from various sources.

				<ul style="list-style-type: none"> - Learn to use ultrafiltration, chromatography, and electrophoresis techniques for isolation and characterization of biomolecules. - Acquire the skills to use spectroscopic and centrifugal methods for isolation and characterization of biomolecules apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
5	VR-105	Biological Chemistry and Analytical Techniques	2017	<ul style="list-style-type: none"> - Acquire knowledge on major elements and biomolecules of life and their chemical composition, bonding and primary characteristics, classification, structure, functions of carbohydrates, nucleic acids, amino acids, peptides, proteins and lipids and mechanism of protein synthesis and degradation. - Understand the types, properties, biological functions of enzymes, nucleic acids, hormones, growth regulators, vitamins, porphyrins and other pigments and nucleic acid metabolism. - Describe the approaches involved in characterization and concentration of biomolecules and discuss the principles and applications of various techniques applied for characterization of biomolecules in biological research such as chromatography, centrifugation, electrophoresis,

				<ul style="list-style-type: none"> - Learn about electrochemical techniques, basic principles and applications of flow cytometry, radioisotopes, spectroscopy, amino acid, and nucleotide sequencers
6	VR-106	Human values and Professional ethics - I	2017	<ul style="list-style-type: none"> - To enable the students to imbibe and internalize the moral values and ethical principles - 2. To learn ethics moral and social values and ethical behavior in the personal and Professional lives. - 3.To learn the rights and responsibilities and to appreciate the rights of others and to create awareness on religious values and other good acts and facts of life. - 4.To acquire knowledge about the important facts of Bhagavad Gita, values hidden in religions, religious tolerance and aware of crime, and punishment theories
8	VR-201	Microbial Genetics and Molecular Biology	2017	<ul style="list-style-type: none"> - To gain understanding of prokaryotic and eukaryotic genome organization, modern concept of genes, plasmids, mobile genetic elements - To learn gene transfer and mapping mechanisms in bacteria, genetics of viruses and requirements and mechanism of DNA replication. - To attain knowledge about the mechanism of DNA damage and repair, concept of mutations and their importance, processes involved in transcription,

				<ul style="list-style-type: none"> - To attain knowledge about the mechanism of translation, regulation of gene expression and gene silencing mechanisms.
9	VR-202	Recombinant DNA Technology	2017	<ul style="list-style-type: none"> - To learn basic and advanced tools and techniques, approaches and strategies used in gene manipulation in prokaryotic and eukaryotic systems. - 2. To learn the major techniques and applications of gene manipulation such as DNA sequencing, nucleic acid hybridization - 3. To understand the strategies used for gene expression in heterologous hosts, proteomics, genomics. - 4. To generate knowledge on genetically modified plants and animals and applications/implications of genetic engineering in agriculture, medicine, industry, and biology.
10	VR-203	Microbial Genetics and Molecular Biology & Recombinant DNA Technology	2017	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up Cell and Molecular Biology laboratory with ribonuclease free environment. - Isolate and estimate DNA and RNA from microbial, plant and animal tissues and demonstrate curing of plasmids, replica plating techniques, conjugation in bacteria, Ames test, induction of mutations in bacteria

				<p>by physical/chemical agents, isolation of microbial mutants by gradient plate method.</p> <ul style="list-style-type: none"> - Acquire practical skills to isolate plasmids from bacteria, restriction enzyme digestion of recombinant plasmid DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the preparation of southern and dot blots for hybridization. - Solve the problems related to Molecular Genetics/Biology and Recombinant DNA Technology and compete for the competitive exams such as UGC-CSIR-NET, GATE, APSET and other scientific examinations.
11	VR-204	Cell biology and Immunology	2017	<ul style="list-style-type: none"> - Acquire the practical skills in conducting various experiments related to Cell Biology such as isolation of cells, preparation of cell cultures. - Learn isolation of mitochondria, study of chromosomes, identification of stages of mitosis in onion root tips. - Identify of primary and secondary lymphoid organs in virtual animal model and illustrate basic immunology techniques such as counting of RBC and WBC, estimation of hemoglobin, identification of the blood

				<p>groups and Rh.</p> <ul style="list-style-type: none"> - Demonstrate antigen-antibody interactions by conducting <i>in vitro</i> serological tests such as immunodiffusion and immune-electrophoresis, DAC-ELISA, Dot-ELISA and western blotting and apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
12	VR-205	Cell biology and Immunology	2017	<ol style="list-style-type: none"> 1.To understand the structure and contents of prokaryotic and eukaryotic cells, general principles and pathways of cell communication and cell signaling. 2. To describe the concepts and methodologies of plant and animal tissue and organ cultures, cell counting and introduction to stem cell cultures. 3..To learn about the historical perspectives of immunology, innate and adaptive immunity mechanisms, various components of immune system, antigens, antibodies, <i>in vitro</i> and <i>in vivo</i> antigen and antibody interactions and 4.To understand the mechanism of humoral and cell mediated immune responses, immune effector mechanisms, MHCs, hypersensitivity reactions, autoimmune and immunodeficiency disorders, transplantation and transfusion immunology and concepts and applications of conventional and modern vaccines.

13	VR-206	Human values and Professional ethics - II	2017	<ul style="list-style-type: none"> - Understand the definition of value education, concept of human and family values, components, structure, and responsibilities of family system and acquire reflective thinking, rational skepticism. - Describe the moral responsibilities and ethical issues of medical and health care professionals, avoid unethical things, learn ethical issues raised in genetic engineering and new biological technologies. - Learn to practice ethical standards in business by understanding ethical theories and maintain work ethics to build trust between businessman and consumer and avoid unethical behavior and ethical abuse and develop scientific temper, digital literacy. - Learn to practice environmental ethics by taking responsibility to protect environment and ecosystem and understand the importance of maintenance of social ethics and ethics of media.
14	VR-301	Plant Virology	2017	<ul style="list-style-type: none"> - Understand the induction of plant virus diseases, virus-host interactions and movement strategies. - Learn the vector and non-vector modes of plant virus transmission, virus-vector relationships and molecular mechanisms involved in virus

				<p>vector interactions and the approaches used for identification and characterization of the viruses and virus strains.</p> <ul style="list-style-type: none"> - Acquire the knowledge on plant virus spread and survival in nature and approaches used to detect plant viruses and diseases. - Describe the approaches used for the control and management of plant viruses and vectors and strategies used for acquiring plant virus resistance.
15	VR-302	Plant Viruses and Diseases	2017	<ul style="list-style-type: none"> - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of cereals and millets, oil seed crops - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of vegetable, and tuber crops. - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of food legumes, fruit crops - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of cash, spice and beverage crops and flowering and foliage ornamentals.

16	VR-303	Plant Virology or Plant Viruses and Diseases	2017	<ul style="list-style-type: none"> - Identify major virus diseases of local economically important crop plants and weeds through theory exercises, local field surveys, agricultural research station visits. - Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts. - :Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules and generation of virus free plants through apical meristem tip culture. - Identify local plant virus vectors, determine virus disease incidence, and progress curves through local field visits. -
17	VR-304	a) Molecular Virology (OR) b) Biostatistics	2017	<ul style="list-style-type: none"> - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, clarification using organic solvents and low speed centrifugation, precipitation using sodium chloride or ammonium sulphate or

		and Bioinformatics		<p>polyethylene glycol or differential centrifugation, preparation of step and linear density gradients, further purification of viruses using sucrose density gradient centrifugation and final pelleting by ultrafiltration or ultracentrifugation and to check the quality and quantity of viruses using spectroscopy or transmission electron microscopy.</p> <ul style="list-style-type: none"> - Isolate virus coat proteins and determine its quantity and molecular weight through spectroscopy and SDS-PAGE, respectively. - Isolate virus nucleic acids (dsRNA, RNA and DNA), estimate their quantity by spectroscopy, determine their size and molecular weight through agarose gel electrophoresis. Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation.
18	VR-305	(a) Molecular Virology (OR) (b) Biostatistics and Bioinformatics	2017	<ul style="list-style-type: none"> - To understand molecular architecture of viruses and molecular mode of inactivating agents on viruses - To learn about types of viral genomes and steps involved in virus replication and replication strategies of DNA viruses. - 3. To understand basic concepts of statistics, construction of histogram, normal distribution, mean, median and standard deviation, comparison

				<p>of means and variances, examples of proportion and count data</p> <ul style="list-style-type: none"> - 4.To learn about analysis of variance, correlation and regression and statistical parameters for biological assays.
19	VR-306	<p>(a) Biology of Viruses and their Management (OR) (b) Biology of Virus Vectors and their Management</p>	2017	<ul style="list-style-type: none"> - To understand the basics of general entomology, collection, preservation, maintenance and transportation of virus vectors and vector-borne viruses of animals and humans - To learn about the biology and ecology of mosquitoes, blood sucking mites and prevention and control methods of animal and human virus vectors in urban and rural settings. - To describe the methods of collection, culturing and identification of plant virus vectors, virus vector transmission mechanisms, - To learn about the soil-borne vectors, epidemiology of vector-borne viruses, management of plant virus vectors and concepts of vector resistant crops
20	VR-401	Animal and Human Virology	2017	<ul style="list-style-type: none"> - To acquire knowledge on virus-host interactions, host innate and adaptive immune response to viruses, molecular mechanisms of viral pathogenesis, - To acquire knowledge on transmission of viruses, mechanism of virus, persistence, infection and spread in the body. - To learn the epidemiological concepts and methods of virus diseases, measures of disease occurrence, disease determinants, ecology,

				<p>epidemiology</p> <ul style="list-style-type: none"> - To learn the surveillance of virus diseases, strategies of virus maintenance in communities, basic concepts, types and patterns of disease survey, prevention, and control methods of viruses.
21	VR-402	Animal and Human Virus Diseases	2017	<ul style="list-style-type: none"> - Learn the safety practices and To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (+) sense ssRNA viruses infecting animals and humans. - To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (-) sense ssRNA viruses infecting animals and humans - To understand the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses infecting animals and human - To learn about the prion diseases, biology, prevention, and management of major viruses of silkworm, poultry, fish and prawn, emerging and reemerging virus diseases. -
22	VR-403	Animal and Human Virology & Animal and human virus	2017	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity, and ethical guidelines to be followed in the Molecular Virology laboratory. - Learn the technologies related to preparation of media for cell/tissue

		diseases		<p>cultures, preparation of cell cultures/embryonated eggs for virus cultivation and isolation and quantitation of viruses using differential centrifugation and symptomatology/spectroscopy, respectively.</p> <ul style="list-style-type: none"> - Develop skills to test the plant and human viruses using serological and molecular tests and kit-based methods. - Acquire knowledge on virus-based nanotechnology protocols, virus epidemiology by doing extension activities and visiting field, poultry, agriculture research station and aqua forms.
23	VR-404	Project work related to Virology (OR) (a) Applied Virology (OR)	2017	<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of plant, animal and human viruses and to isolate and quantitate viruses. - Learn the methods to detect plant and animal viruses and able to analyze various types of results obtained from serological and molecular viral diagnostic methods. - Apply the skills acquired to prepare NPV as biopesticides and virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits. -

		(b)Tumor Biology and Viruses		<ul style="list-style-type: none"> - Acquire skills to detect carcinogens and mutagens using standard tests such as Ames test. - Distinguish transformed and normal cell lines and determine the anticancer property of biologically active compounds. - Design and execute PCR and other point of care methods using commercial kits for detection of tumor viruses (HCV, HIV, HPV). - Perform cultivation of poultry tumor viruses in cell cultures and acquiring the knowledge on histopathology of animal tumor viruses. -
24	VR-405	(a) Applied Virology (OR)	2017	<ul style="list-style-type: none"> - Understand the basic concepts, types, requirements and methodologies of plant/animal cell and tissue cultures used for cultivation of plant and animal viruses. - Learn the production of recombinant DNA technology-based antibodies and vaccines to viruses and the concepts and methods of production of virus resistant/tolerant crops and virus-based biopesticides. - Acquire knowledge about common virus infections caused to human

				<p>beings through vector and non-vector borne modes and basic principles of biosafety, biosecurity, and ethical/regulatory issues in Virology and basics in Intellectual Property Rights (IPR).</p> <ul style="list-style-type: none"> - Understand the utilization of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology, phage display and therapy technologies and viruses as biological weapons.
		b)Tumor Biology and Viruses		<ul style="list-style-type: none"> - Acquire knowledge about the basic aspects of tumors, distinguish normal and transformed cells and describe the role of oncogenes and tumor suppressor genes in causing cancers. - Understand the role and mechanism of carcinogens in inducing carcinogenesis and molecular viral mechanisms of transformation and tumorigenesis. - Describe the role of oncogenes, tumor suppressor genes, viral oncogenes, types, and mechanism of RNA viruses in inducing tumors.

				<ul style="list-style-type: none"> - List the DNA viruses causing tumors and learn their tissue transformation mechanisms, role of tumor suppressor genes in tumor suppression, immune mechanisms against tumors, immunotherapy, and physical and chemical therapeutic interventions against tumors
25	VR-406	(a) Clinical Virology (OR)	2017	<ul style="list-style-type: none"> - Acquire basic understanding of virus properties, virus replication and learn methods of virus isolation and characterization of viruses using serological and molecular techniques. - Learn to collect, preserve the virus samples, and detect the viruses using biological, serological, and molecular methods, laboratory biosafety and quality control practices. - Understand the principles of epidemiology, disease occurrence patterns, disease surveillance and control strategies, concept, and methods of modern vaccines to viruses. - Learn about the approaches used for prevention and control of clinically important infectious caused by human viruses, unconventional slow viruses, and prions.

		(b) Emerging Infectious Viral Diseases		<ul style="list-style-type: none"> - Understand the evolution, biology, epidemiology, and emergence of infectious virus diseases, biology of emerging infectious diseases, zoonotic infections - Learn about the biology, clinical symptoms, epidemiology, diagnosis, and control of viruses causing AIDS and SARS and host defense mechanisms against infectious virus diseases. - Describe the biology, clinical symptoms, epidemiology, diagnosis, and control of vector borne emerging infectious viral diseases. - Acquire knowledge on impact of social and environmental change on emergence of viruses, vector control and antiviral therapies, vaccines, public health measures and bioterrorism.
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44. Zoology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ZOO-101	Invertebrata & Chordata	2017	<ul style="list-style-type: none"> i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities. ii. To understand the various biological functions, the

				<p>evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>
2	ZOO-102	Genetics & Evolution	2017	<p>i. Students will appreciate the concept of epigenetics as a key mechanism of regulation of gene expression steering development and cell fate that can ultimately be affected in disease condition</p> <p>ii. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2017	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form</p>

				<p>with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2017	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's</p>

				<p>theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	ZOO-105	Metabolic Regulation & Cell Function	2017	<p>i. The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	ZOO-106	Human Values and Professional Ethics-I	2017	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by</p>

				<p>Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	ZOO-201	Cell Biology & Immunology	2017	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical</p>

				<p>perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	ZOO-202	Molecular Biology	2017	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	ZOO-203P	Practical-I Molecular Biology and Cell Biology	2017	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and</p>

				functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.
10.	ZOO-204P	Practical-II Comparative Animal Physiology and Immunology	2017	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	ZOO-205	Comparative Animal Physiology	2017	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p>

				<p>ii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	ZOO-206	Human Values and Professional Ethics-II	2017	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	ZOO-301	Developmental Biology	2017	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p>

				<p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	ZOO-302	Environmental Biology	2017	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	ZOO-303P	Developmental Biology and Tools & Techniques	2017	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and</p>

				<p>concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	ZOO-304P	Environmental Biology and Enzymology	2017	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and</p>

				<p>nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	ZOO-305A	Tools & Techniques	2017	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	ZOO-305B	Enzymology		<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	ZOO-305C	Bioinformatics & Biostatistics	2017	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in</p>

				<p>Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	ZOO-306A	Economic Zoology	2017	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p>

				iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.	
21	ZOO-306B	Environmental Assessment & Auditing	Impact & Green	2017	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
22	ZOO-306C	Biodiversity conservation	and	2017	<p>i. Student will gain knowledge about the diversity distribution pattern of the enormous number of species and different kind of ecosystems in the natural world.</p> <p>ii. The interaction between the various species and environment and the impact of social development on biodiversity</p> <p>iii. The importance of conservation of biodiversity which serving to the mankind and the ecosystem, and the major threats to biodiversity due to human developmental activities. The loss of biodiversity and the impact to the humankind.</p>
23	ZOO-401	Neurobiology			i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials

				<p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	ZOO-402	Toxicology	2017	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
25	ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2017	<p>i. Learnt about structure, function and organization of Neurons in the Central nervous system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining</p>

				<p>characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effective communicate with both specialist and non-specialist audiences/community.</p>
26	ZOO-404P	Toxicology and Animal Behavior & Wild life	2017	<p>i. Skill development in environmental and occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p>

				vii. To understand how to conserve the wild animals
27	ZOO-405A	Animal Biotechnology & Microbiology	2017	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>

28	ZOO-405B	Animal Behavior & Wild life	2017	<ul style="list-style-type: none"> i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates ii. Gained lot of information on different types of Learning phenomenon and their mechanisms. iii. To understand the how to conserve wild animals and management strategies. iv. To gain the knowledge about wild animals and animal products importance.
29	ZOO-405C	Endocrinology	2017	<ul style="list-style-type: none"> i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism. ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways. iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.
30	ZOO-406A	Genetic Engineering	2017	<ul style="list-style-type: none"> i. This course exposes students to the applications of genetic engineering in biological research. ii. Students will be able to perform basic genetic engineering experiments at the end of course. iii. Students will acquire knowledge of advances in

				biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.
31	ZOO-406B	Structural Biology	2017	<ul style="list-style-type: none"> i. Understand the evolution of protein structural motifs and domains and associate this with function; ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins. iii. Understand and explain enzyme mechanisms in a structural context. iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology. v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.
32	ZOO-406C	Human Health and Infectious diseases	2017	<ul style="list-style-type: none"> i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections ii. Provides knowledge on the physiological mechanisms leading to diseased conditions. iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases. iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.

Animal Biotechnology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill Development
1	ABT- Core-101	Metabolic Regulation & Cell Function (MRCF)	2017	<ul style="list-style-type: none"> • Knowledge on chemical bonds, thermodynamics principles and metabolisms of Glycolysis, TCA Cycle and their biomedical importance will be gained. • Metabolic disorders of urea cycle and importance of protein structure and functions can be understood. • Biosynthesis of purine and pyrimidine nucleotide and Clinical disorders of purine and pyrimidine metabolism can be learnt • To become proficient in Biomedical importance of lipids and over view metabolism of carbohydrate, protein and lipids
2	ABT- Core-	Tools & Techniques (TT)	2017	<ul style="list-style-type: none"> • Skills will be acquired on chromatography,

	102			<p>centrifugation, electrophoresis and blotting techniques</p> <ul style="list-style-type: none"> • To get knowledge on cell and tissue culture, cell types, culture media and overview of stem cell biology • To acquire skill on electrganetic spectrum, type of detectors, electophysiological methods and brain activity recording techniques • Microscopic techniques, different fixation and staining techniques, tissue processing for microtomy, cryotechiques will be learnt
3	ABT-Core-P-103	Metabolic Regulation & Cell Function	2017	<ul style="list-style-type: none"> • Practical knowledge will be gained on biochemical assays like estimation of proteins, structural proteins, soluble proteins, free amino acids, total carbohydrates and total cholesterol. • To gain knowledge in handling equipments like cooling centrifuge, autoclave, laminar air flow etc., and, maintenance of animal cell culture laboratory. <p>To learn microbial media preparation for their culture and identification</p>
4	ABT-Core-	Tools & Techniques	2017	<ul style="list-style-type: none"> • Isolation of DNA from chick liver

	P-104			<ul style="list-style-type: none"> • Agarose gel electrophoresis • Estimation of DNA and RNA by diphenyl aniline method and orcinol method • Paper chromatography • Plating procedures • Gram staining • Anti microbial susceptibilities test
5	ABT-CF-105	Microbiology and Diseases	2017	<ul style="list-style-type: none"> • Microorganisms classification and structure of prokaryotic and eukaryotic microorganism can be understood • To get knowledge on Nutritional requirements to microorganisms, growth of microorganism, control of microorganism and microbes of biotechnological importance • To become proficient in chemical nature of gene, plasmids incompatibility, horizontal transfer of genome among the microbial community and Benzer's classical studied on H⁺ locus • To learn diseases caused by microorganism
6	ABT -EF-106	Human Values & Professional Ethics (HVPE)-I	2017	<ul style="list-style-type: none"> • Knowledge will be gained on nature of ethics its relation to religion. Politics, Business • To understand nature of values Good and

				<p>Bad, end and means, analysis of basic moral concepts, good behavior and respect for elders, character and conduct</p> <ul style="list-style-type: none"> • Proficient on hagavad Githa • Crime and theories of punishment will be learnt
7	ABT- Core-201	Molecular Biology (MB)	2017	<ul style="list-style-type: none"> • To gain knowledge on DNA structure, genome of Nuclear and mitochondrial and maternal Inheritance • To understand replication in prokaryotes, Enzymology of DNA replication, Discontinuous replication and Bidirectional replication • Synthesis of RNA, Types of RNA, Genetic code and Ribosome structure will be understood <p>Knowledge will be gained regulation I and II and Operon concepts</p>
8	ABT- Core-202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2017	<ul style="list-style-type: none"> • To understand animal cell culture, biology of stemcells and embryonic stem cell • To learn propagation of embryonic stem cells, nuclear transfer technology, animal cloning and stem cell differentiation • To gain knowledge on stem cell plasticity,

				<p>stem cell assay and protocols, stem cell separations and stem cell therapies</p> <p>To learn stem cells and tissue engineering, human embryonic stem cells and society, intellectual property results</p>
9	ABT-Core-P-203	Molecular Biology & Immunology	2017	<ul style="list-style-type: none"> • Effect of UV radiation on bacterial growth • SDS PAGE • Electrophoresis • Blood grouping • Blood smear preparation • RBC count • Radial Immuno Diffusion • Neubauer chamber
10	ABT-Core-P-204	Animal Cell culture & Stem Cell Biology & Cell Biology	2017	<ul style="list-style-type: none"> • Laboratory safety rules and regulations • Animal handling and care • Preparation of cell culture media • Staining of animal cells • Preparation of cell lines • Culture of virus in chick embryo
11	ABT- CF-205	Cell Biology & Immunology (CB&IM)	2017	<ul style="list-style-type: none"> • Able to learn organization of prokaryotic and eukaryotic cell, Nucleus structure, Eukaryotic

				<p>chromosome and polytene and lamp brush chromosomes</p> <ul style="list-style-type: none"> • To learn mechanism of cell division, regulation of eukaryotic cell cycle, chromosomal abnormalities and tumor biology • To understand types of immunity, types of cell involved in immune response, structure and function of antibody and complement cascade • To gain knowledge on Antigen presentation, hypersensitivity reactions, immune tolerance and immunopathology
12	ABT- EF-206	Human Values & Professional Ethics (HVPE)-II	2017	<ul style="list-style-type: none"> • To gain knowledge on value education • To learn medical ethics • To become proficient on business ethics • To understand environmental ethics and social ethics
13	ABT- Core-301	Enzymology (ENZ)	2017	<ul style="list-style-type: none"> • To understand enzyme specificity, enzyme catalysis and isolation and purification of enzymes • To gain knowledge on theories of enzymes kinetics, enzyme kinetics and its importance, effect of reactant concentrations and effect of temperature of pH and enzyme concentration reaction rate

				<ul style="list-style-type: none"> To become proficient on clinical aspects of enzymology, immobilized enzymes, isoenzymes and enzyme engineering
14	ABT- Core-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2017	<ul style="list-style-type: none"> To become proficient on structure and function of male and female reproductive system; reproductive cycles and contraception in male and females To gain skill on sex determination, selection for qualitative inherited characters, parental determination and verification and progeny testing To understand artificial insemination techniques, in vitro fertilization, embryo transfer technology, microinjection and macroinjection To learn transgenic technology development, generation of chimeric, transgenic and knockout mice
15	ABT-Core-P-303	Enzymology & Genetic Engineering	2017	<ul style="list-style-type: none"> To determine the effect of substrate concentration, enzyme concentration and temperature on enzyme activity Measures of central tendency regression and correlation analysis T-test

16	ABT-Core-P-304	Animal Reproduction, Breeding & Transgenic Technology & Environmental Biotechnology	2017	<ul style="list-style-type: none"> • To estimate the sperm motility, sperm count , sperm membrane integrity test and pH of semen. • Determination sperm viability • Retrieval of gene and protein sequence from gene and protein bank, redelivery
17	GE-305A	Genetic Engineering (GE)	2017	<ul style="list-style-type: none"> • Use of enzymes in DNA and RNA synthesis, restriction enzymes and ligation and modification o DNA • To learn vectors for constructions of genomic libraries, expression vectors, promoters and vectors used for cloning • To gain knowledge on DNA fragments, cDNA synthesis, PCR • To become proficient on ligation between cohesive and blunt end DNA fragments, introduction of cloned genes into host and expression of cloned genes
18	GE-305B	Environmental Biotechnology (EBT)	2017	<ul style="list-style-type: none"> • To gain knowledge on waste and pollutants, hazards from wastes and pollutants and hazards from chemicals in wastes

				<ul style="list-style-type: none"> • Waste treatment, treatment of liquid wastes, treatment of solid waste and contributions of biotechnology to waste treatment will be understood • To become proficient in aerobic waste water treatment and measurement of pollution levels • To learn anaerobic treatment of waste water, biodegradation of xenobiotics compounds, hazards from xenobiotics and bioremediation
19	GE-305C	Biostatistics & Bioinformatics	2017	<ul style="list-style-type: none"> • To understand prediction of protein structure and protein sequence database, prediction of gene structure, submission of sequence to database, phylogenetic analysis • To learn biostatistics, measures of location and dispersion, curve fitting and correlation and regression • To understand probability distribution, tests of significance, student t-test and F-test, chi square test and their application
20	OE-306A	Animal Biotechnology & Industrial Applications	2017	<ul style="list-style-type: none"> • To gain knowledge on preservation animals engineered bacteria/yeast/ cell lines,

				<p>metabolic engineering, fermentative production and glycolytic pathway</p> <ul style="list-style-type: none"> • To understand monoclonal antibodies production and genetically engineered products • To know the DBT guidelines, Global scenario of transgenic micro organisms and ethical issues related to biotechnology products
21	OE-306B	Cancer Biology	2017	<ul style="list-style-type: none"> • To gain knowledge on cancer types and tumor development • To learn oncogenes, mechanisms of onogene activation and chromosomal translocation • To understand cell cycle regulation and cancer, DNA Damage and repair • To learn tumor immunology, Vaccine development, tumor cell evasion of immune defenses
22	ABT- Core- 401	Medical Biotechnology (MBT)	2017	<ul style="list-style-type: none"> • To understand disease diagnosis, use of monoclonal antibodies in detection of genetic disease • To learn Disease treatment, interferons, growth factor, and antisense nucleotide as

				<p>therapeutic agent</p> <ul style="list-style-type: none"> • To gain knowledge on gene therapy, types of gene therapy, augmentation therapy and targeted transfer • To become proficient on forensic medicine, preparation of DNA sample. Approaches for DNA analysis and applications of forensic medicine
23	ABT- Core- 402	Fermentation Technology and Downstreaming Process (FTDSP)	2017	<ul style="list-style-type: none"> • To understand cell distribution methods, separation techniques, purification by chromatographic techniques and isolation and screening and maintenance of industrially importance microbes • To learn bioreactor design, fermentation economics, upstream processing, membrane based separations <p>To gain knowledge on importance of downstream processing economics of downstream processing</p>
24	ABT-Core- P-403& 404	Project and Viva- Voce	2017	<ul style="list-style-type: none"> • Students must perform project work which includes experiments related to Toxicology, Animal Tissue culture, Fermentation technology or any work related to biology. <p>After completion of project work students have to</p>

				<p>prepare dissertation by their own and submit to the committee members.</p> <ul style="list-style-type: none"> • Evaluation of dissertation will be conducted by committee members through Viva-Voce
25	GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2017	<ul style="list-style-type: none"> • To understand socio-economic and legal impact of biotechnology, use of genetically modified organisms, moral and ethical issues in biotechnology and safety issues with GMO • To learn intellectual property right, evaluation of patenting, application of GATT and IPR and WTO Act and global and Indian biodiversity • To gain knowledge on Indian Patent Act 1970, role of country patent office, U.S. Patent trademark office and U.S. Paten system Vs Indian Patent system • To gain knowledge on Ethics and genetic engineering, patent of genes, human cloning, stem cell, regulatory requirements for drugs and biologics, GLP and GMP
26	GE-405B	Drug design and Development	2017	<ul style="list-style-type: none"> • To learn drug design, analog approach of drug designing

				<ul style="list-style-type: none"> • To understand SAR Vs QSAR, Partition coefficient, Hammett's substituent constant and Taft's steric constant, Free Wilson model, 3D-QSAR approach like COMFA and COMIA • To gain knowledge on pharmacological screening and assays, pharmacological screening models for therapeutic areas, cell based assay, biochemical assay, radiological binding assay, small molecule manufacturing • To learn Drug Laws, FDA, OECD, ICH, Schedule Y, drug registration, Regulations of human pharmaceuticals and biological products, and clinical trial design
27	GE-405C	Animal Cell Culture Techniques	2017	<ul style="list-style-type: none"> • To understand Animal cell culture, culture medium, characteristics of cell in culture, measurement of viability and cytotoxicity, cell types and apoptosis • To gain knowledge in scaling up of animal cell culture, cell transformation, tissue engineering, transgenic animals, animal cloning • To become proficient in improvement of

				biomass, pharming products, plasminogen activator and ethical issues related to biotechnology products
28	OE-406A	Advanced Genomics and Proteomics	2017	<ul style="list-style-type: none"> • To learn structure of Prokaryotic and Eukaryotic genomes, Isolation and purification of genomic DNA, Construction of Physical maps and Whole genome sequence alignment • To understand genome annotation, methods for gene identification, functional genomics, transcript profiling • To learn protein structure, sample preparation and separation 2D-analysis, Multidimensional liquid chromatography, protein-protein interactions analysis <p>To gain knowledge on DNA /protein sequence homologies, Gene duplication and</p>
29	OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2017	<ul style="list-style-type: none"> • To understand Types of honey bees, life history of honey bees, management of apiculture and by products of honey bees and economic importance disease and their control • To become proficient on fresh water fin fish

				<p>culture, shell fish (prawn and Pearls) culture</p> <ul style="list-style-type: none"> To understand historical background of vermicompost, methods of vermiculture and problems involved in vermicompost
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45. Business Management

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MBA 101	Management And Organisational Behaviour	2017	<p>Examine the Management concepts and functions.</p> <p>Apply the concepts of planning, decision making.</p> <p>Apply the concepts of delegation of authority, decentralisation and departmentation in real life situations.</p>	

				<p>Analyse the controlling principles and practices, Ethics and corporate social responsibility.</p> <p>Evaluate the basic concepts of organizational conflicts and climate.</p>	
2	MBA 102	Managerial Communications	2017	<p>Apply the basic concepts of communication for business correspondence.</p> <p>Distinguish different forms of communication.</p> <p>Evaluate different types of communication.</p> <p>Adapt report writing skills of different types on need basis.</p> <p>Acquire presentation skills along with the interview techniques.</p>	
3	MBA 103	Managerial Economics	2017	<p>Describe the importance of managerial economics and its contribution to decision making in different types of business organizations by the managerial economist.</p> <p>Apply the basic principles of managerial economics.</p> <p>Apply demand analysis concept in the real life business situations.</p> <p>Discuss the meaning and usefulness of the production function and cost function in</p>	

				analysing the firm's production activity.	
4	MBA 104	Accounting For Managers	2017	<p>Outline the basic knowledge of accounting, bookkeeping, accounting Principles, accounting cycle.</p> <p>Apply the concepts of journal, ledger and Trail balance.</p> <p>Identify the nature of expenditure and revenue for preparation of financial statements of business.</p> <p>Examine the role of accounting policies like depreciation.</p>	
5	MBA 105	Quantitative Analysis For Management Decisions	2017	<p>Recall the fundamentals in Mathematics and Statistics.</p> <p>Demonstrate the methods to solve derivatives, progressions and gaming.</p> <p>Choose decision making in a competitive situation.</p> <p>Solve transportation Problem with minimum cost of transport of commodities.</p>	
6	MBA 106	Information Technology For Managerial Applications	2017	<p>Identify various network topologies.</p> <p>Apply Various Mathematical & Statistical</p>	

				Operations Using MS office &MS-Excel. Create Effective basic power point Presentations	
7	MBA 107	Business Statistics	2017	About the information needs, sources of data and measures of central tendency . The concept of Scientific Research and the methods of conducting Scientific Enquiry. The Statistical Tools of Data Analysis.	
8	MBA 108	Human Values And Professional Ethics	2017	About ethics, values and morals. The concepts of value based education and its relevance. Learn about environmental and social ethics	
9	MBA 201	Marketing Management	2017	Outline the concepts of marketing. Create the segmentation, targeting and positioning in marketing. Analyse various phases of product life cycle. Evaluate various methods of pricing and identify the best pricing strategy. Evaluate marketing communication strategies.	
10	MBA 202	Financial Management	2017	Outline the basic concepts of Financial Management. Comprehend the various methods of Investment	

				<p>Analysis and apply various techniques of capital budgeting.</p> <p>Adapt the concepts of leverage, capital structure and its effect on the long term survival of the firm.</p> <p>Appraise various methods of computation of cost of capital.</p>	
11	MBA 203	Human Resources Management	2017	<p>Outline the functions and challenges of HRM.</p> <p>Apply different concepts of HR Planning, Recruitment, Selection, Training, Interviewing Techniques and Executive Development Programs.</p> <p>:Apply the uses of job analysis, job description, job specification, ergonomics in industry and the methods of job evaluation.</p> <p>Utilize the various methods of performance appraisal.</p>	
12	MBA 204	Production Management	2017	<p>Apply the basic concepts of production and operations management and identify types of manufacturing processes.</p> <p>Define and explain concept of production planning and control.</p>	

				Identify effective plant location and plant layout. Design strategies to improve productivity.	
13	MBA 205	Business Research Methods	2017	Adapt the fundamentals of Business research methodology. Identify research problem. Apply sample and census survey and measuring techniques. Design data collection techniques. Develop data processing procedures and apply tools. Draft thesis/report writing.	
14	MBA 206	Management Information Systems	2017	Understand various types of information systems. Analyse the various functional information systems	
15	MBA 207	Operation Research	2017	Understand various concepts and techniques of OR. Apply various OR techniques to improve the efficiency of the organisations.	
16	MBA 208	Leadership Values	2017	Identify the leadership qualities to run an organization successfully.	

				Appraise the various concepts of value based leadership.	
17	MBA 301	Business Environment	2017	Outline the basic concepts of business environment and its components. Analyze the structure of Indian economy. Discuss the components of fiscal policy and balance of payments. Evaluate different trade related policies.	
19	MBA 302	Entrepreneurship	2017	Understand the concept of entrepreneurship. Analyse entrepreneurship development programs in India and contents for training for entrepreneurial competencies. Develop Creativity in entrepreneurship. Design the project reports & make project evaluation	
20	MBA 311	Consumer Behaviour	2017	Evaluate the consumer behaviour and business strategies. Apply the various consumer behaviour models. Build the psychological process and develop the effective strategy in terms of impact on consumer behaviour.	
21	MBA 312	Customer Relationship	2017	Develop the concepts of CRM and strategies in	

		Management		<p>business.</p> <p>Appraise the customer profile and perception of customer behavior in relationship perspectives.</p> <p>Analyse strategies for customer acquisition, models of CRM.</p>	
22	MBA 313	Marketing Research And Information Systems	2017	<p>Understand basic concepts of research and methodology of conducting researches in marketing domain.</p> <ul style="list-style-type: none"> • Pursue the summer training/ project work and a winter project work and a professional career in Marketing Research domain. 	
23	MBA 314	Advertising And Sales Promotion Management	2017	<p>Discuss the basic concepts of advertising for better understanding the challenges and opportunities in advertising .</p> <p>Analyse the relations of advertising with segmentation and budget decision .</p> <p>Design better advertising strategies for the company .</p> <p>Identify media options which are suitable for the company for better promotion .</p> <p>Develop an effective advertising campaign for</p>	

				the company .	
24	MBA 315	Product And Brand Management	2017	<p>Discuss the importance of brand image in marketing .</p> <p>Formulate brand vision which communicates better the organisations’ policy on Branding .</p> <p>Analyse brand promotion methods in brand communication .</p> <p>Analyse factors influencing brand extension decisions .</p> <p>Design brand marketing programmes and for better brand performance .</p>	
25	MBA 316	Digital Marketing	2017	<p>Get knowledge regarding basic concepts of Digital Marketing.</p> <p>Analyse and Choose different channels of digital marketing according to the changing requirements of the markets</p> <p>Construct different digital marketing plans on situational basis.</p> <p>Manage digital by conducting a marketing research and adapt the changes by creating new goals for further reputation.</p>	
26	MBA 321	Financial Services	2017	Have awareness on insurance industry & its	

				regulations. Create awareness on different financial services.	
27	MBA 322	Investment Management	2017	Analyse various investment alternatives for effective investment decision . Discuss the importance of security analysis in investment decision process . Design bond management strategies to realise good return on bond investment . Apply different equity valuation methods for the valuation of securities . Construct optimal portfolio for higher return at lower risk . Analyse different schemes of mutual funds for better investment decision .	
28	MBA 323	Business Taxation	2017	Conclude the fundamentals of Taxation . Discuss taxation methods of companies and individuals . Analyse income sources from business through taxation . Evaluate Tax management strategies	
29	MBA 402	Strategic Management	2017	Develop vision, mission and objectives of the organization.	

				<p>Analyse industry and develop techniques of competitive analysis.</p> <p>Appraise strategic leadership styles and actions.</p> <p>Formulate effective strategies in business.</p> <p>Develop a frame work for the implementation strategies in business.</p> <p>Evaluate the strategy controls by measuring performance of organization.</p>	
30	MBA 403	Business Laws And Ethics	2017	<p>Analyze the Indian Contract Act.</p> <p>Evaluate Sales of Goods Act and the machinery for redressal of consumer grievances.</p> <p>Elaborate rights and duties of agent and principal, Principal's liability for the acts of agent and the procedure for termination of agency.</p> <p>Examine the rights and duties of partners, dissolution of partnership firm.</p>	

46. Computer Science

S.	Course Code	Title of the Course	Years	of	Activities/Content with direct bearing on
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No.			Introduction	Employability/Entrepreneurship/Skill development
1	MCA 101	Discrete Mathematical Structures	2017	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution
2	MCA 102	Object Oriented Programming with Java	2017	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.

3	MCA 103	Computer Organization	2017	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
4	MCA 104	Operating Systems	2017	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
5	MCA 105	105A.Accounting and Financial management 105B.Accounting Essentials for Computer Applications	2017	<ol style="list-style-type: none"> 1. Use of Accounting information to managers with in the organization. 2. Informs the business decision & control the Management Functions.
6.	MCA 106 P	Software Lab I (based on 101 & 103)	2017	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it.

				<ol style="list-style-type: none"> 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution. 4. To gain knowledge about the Micro Processors. 5. To study the hierarchical memory system including cache memories and virtual memory
7.	MCA 107 P	Object Oriented Programming Lab	2017	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
8.	MCA 108P	Operating Systems Lab	2017	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.

9.	MCA 201	Computer Oriented Operations Research	2017	<ol style="list-style-type: none"> 1. solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. analyse the general nonlinear programming problems. 4. formulate the nonlinear programming models.
10.	MCA 202	Data Structures using Java	2017	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
11	MCA 203	Data Communication and Computer Networks	2017	<ol style="list-style-type: none"> 1. Understand the Network Terminologies and the components used to build networks. 2. Understand Network Models

				<p>(Topologies) to establish networked systems.</p> <p>3. Understand the internal architecture, working procedure of OSI Layer and Protocols.</p>
12	MCA 204	Advanced Database Management Systems	2017	<p>1. Students will get an attempt to provide with the advanced information about ADBMS and their development.</p> <p>2. This Subject also provides the conceptual background necessary to design and develop distributed database System for real life applications and also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms.</p> <p>3. How SQL Programs are implemented as a series of primitive operations and how DDBs are implemented and how applications are design for those DDB</p>
13	MCA 205	205A. E-Commerce	2017	<p>1. Understand the basic concepts and technologies used in the field of management information systems.</p>

				<ol style="list-style-type: none"> 2. Have the knowledge of the different types of management information systems. 3. Understand the processes of developing and implementing information systems and be aware of the ethical, social, and security issues of information systems;
14		205B. Cyber Security	2017	<ol style="list-style-type: none"> 1. Analyze and evaluate the cyber security needs of an organization and determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. 2. Measure the performance and troubleshoot cyber security systems and implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. 3. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators, Design and develop a security architecture for an organization and

				design operational and strategic cyber security strategies and policies.
15		205C. Neural Networks	2017	<ol style="list-style-type: none"> 1. Define what is Neural Network and model a Neuron and Express both Artificial Intelligence and Neural Network. 2. Analyze ANN learning, Error correction learning, Memory-based learning, Hebbian learning, Competitive learning and Boltzmann learning. 3. Implement Simple perception, Perception learning algorithm, Modified Perception learning algorithm, and Adaptive linear combiner, Continuous perception, learning in continuous perception.
16	MCA 301	Software Engineering	2017	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering

				<p>process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements.</p> <p>3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse</p>
17	MCA 302	Computer Graphics	2017	<p>1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics.</p> <p>2. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis and Use of geometric transformations on graphics objects and their application in composite form.</p> <p>3. Extract scene with different clipping methods and its transformation to graphics</p>

				display device, Explore projections and visible surface detection techniques for display of 3D scene on 2D screen and Render projected objects to naturalize the scene in 2D view and use of illumination models for this.
18	MCA 303	Web Technologies	2017	<ol style="list-style-type: none"> 1. Explain the history of the internet and related internet concepts that are vital in understanding web development. 2. Discuss the insights of internet programming and implement complete application over the web and students can Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet. 3. Utilize the concepts of JavaScript and Java, Use web application development software tools i.e. Ajax, PHP and XML etc. and identify the environments currently available on the market to design web sites.

19	MCA 304	304A.Data warehousing and Data mining	2017	<ol style="list-style-type: none"> 1. To identify the scope and essentiality of Data Warehousing and Mining and to analyze data, choose relevant models and algorithms for respective applications. 2. To study spatial and web data mining. 3. Students develop research interest towards advances in data mining.
20		304B.Big Data Analytics	2017	<ol style="list-style-type: none"> 1. Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. 2. Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. 3. Students Interpret business models and scientific computing paradigms, and apply software tools for big data analytics and achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications
21		304C System Programming	2017	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs

				<p>(assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems).</p> <ol style="list-style-type: none"> 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming.
22	MCA 305	305A. Cryptography and Network Security	2017	<ol style="list-style-type: none"> 1. Provide security of the data over the network and do research in the emerging areas of cryptography and network security. 2. Implement various networking protocols. 3. Protect any network from the threats in the world
23		305B. Artificial Intelligence	2017	<ol style="list-style-type: none"> 1. Demonstrate fundamental understanding of the history of artificial intelligence

				<p>(AI) and its foundations and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.</p> <p>2. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.</p> <p>3. Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool, Demonstrate proficiency in applying scientific method to models of machine learning and Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.</p>
24		305C.Mobile Application Development	2017	<p>1. Identify various concepts of mobile programming that make it unique from programming for other platforms, Critique mobile applications on their</p>

				<p>design pros and cons.</p> <ol style="list-style-type: none"> 2. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 3. Program mobile applications for the Android operating system that use basic and advanced phone features, and deploy applications to the Android marketplace for distribution.
25	MCA 401	401A.Cloud Computing	2017	<ol style="list-style-type: none"> 1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. 2. Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient.

				<ul style="list-style-type: none"> 3. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model. 4. Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
26		401B. Dot Net Technologies	2017	<ul style="list-style-type: none"> 1. To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. 2. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but webdistributed, or executed remotely. 3. Make the developer experience consistent across widely varying types of apps, such as Windowsbased apps and Web-based apps.
27		401C. Software Testing	2017	<ul style="list-style-type: none"> 1. List a range of different software testing

				<p>techniques and strategies and be able to apply specific(automated) unit testing method to the projects.</p> <ol style="list-style-type: none"> 2. Distinguish characteristics of structural testing methods and demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. 3. Discuss about the functional and system testing methods and demonstrate various issues for object oriented testing.
28	MCA 402	402A. Essentials of Data Science	2017	<ol style="list-style-type: none"> 1. Having a clear understanding of the subject related concepts and contemporary issues. 2. Having problem-solving ability- to assess social issues and engineering problems. 3. Having a clear understanding of professional and ethical responsibility. 4. Having cross-cultural competency exhibited by working as a member or in teams. And having a good working knowledge of communicating in English

				– communication with the engineering community and society
29		402B.Deep Learning	2017	<ol style="list-style-type: none"> 1. Understand the role of deep learning in machine learning applications and get familiar with the use of TensorFlow/Keras in deep learning applications. 2. Compare Various deep learning Algorithms used for Classification Segmentation and detection. 3. Apply various concepts related with Deep Learning to solve Problems. Analyse different deep learning models in Image related projects.
30		402C.Internet of Things	2017	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
31	MCA 403	Major Project Work	2017	

M.Sc (CS) : Master of Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MSCS -101C	Computer Organization	2017	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
2	MSCS -102C	Programming in Java & Data Structures	2017	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
3	MSCS -103C	Operating Systems	2017	<ol style="list-style-type: none"> 1. Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions,

				<p>etc.,.</p> <ol style="list-style-type: none"> 2. Analyze important algorithms eg. Process scheduling and memory management algorithms. 3. Categorize the operating system's resource management techniques, dead lock management techniques, memory management techniques. 4. Demonstrate the ability to perform OS tasks in Red Hat Linux Enterprise.
4	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2017	<ol style="list-style-type: none"> 1. Ability to apply mathematical logic to solve problems. 2. Understand sets, relations, functions, and discrete structures. 3. Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. 4. Able to formulate problems and solve recurrence relations. 5. Able to model and solve real-world problems using graphs and trees.

5	MSCS – 104 GE - B	Computer Oriented Operational Research	2017	<ol style="list-style-type: none"> 1. Solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. Formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. Analyse the general nonlinear programming problems. 4. Formulate the nonlinear programming models.
6	MSCS - 05CF	Environmental Studies	2017	<ol style="list-style-type: none"> 1. Articulate the interconnected and interdisciplinary nature of environmental studies. 2. Demonstrate an integrative approach to environmental issues with a focus on sustainability. 3. Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem

				<p>solving.</p> <ol style="list-style-type: none"> 4. Communicate complex environmental information to both technical and non-technical audiences. 5. Understand and evaluate the global scale of environmental problems and reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.
7	MSCS - 106EF	1. A. PC Hardware Basics	2017	<ol style="list-style-type: none"> 2. Identify the hardware components of a computer. Lists the hardware components such as processor, memory, disk, main board, etc. 3. Explains the features of the hardware components of a computer. Explains the relationships between the components of a computer and how data are transferred among the components. 4. identify the peripheral devices outside computer. Uses computer using input devices, such as keyboard and mouse.

				<ol style="list-style-type: none"> 5. Transfers data outside the computer using output devices, such as screen and printer. Saves files to removable devices and loads files from removable devices. 6. Connects to the Internet using network cards. identify the software's running on a computer. Identifies BIOS and changes settings in BIOS.
8	MSCS - 106EF	B. Statistical Methods	2017	<ol style="list-style-type: none"> 1. Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data. 2. Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient. 3. Know the association between the attributes. Know the construction of point and interval estimators. 4. Evaluate the properties of estimators. Demonstrate understanding of the theory

				of maximum likelihood estimation.
9	MSCS -201C	Advanced Data Base Management System	2017	<ol style="list-style-type: none"> 1. Explain and evaluate the fundamental theories for advanced database architectures and query operators. 2. Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database. 3. Assess and apply database functions of distributed database. Evaluate different database designs and architecture. 4. Administer and analyze database with query optimization techniques and develop Web interface with database. 5. Understand advanced querying and decision support system.
10	MSCS -202C	Computer Networks	2017	<ol style="list-style-type: none"> 1. Describe the general principles of data communication. Describe how computer networks are organized with the concept of layered approach. 2. Describe how signals are used to transfer data between nodes. Implement a simple

				<p>LAN with hubs, bridges and switches.</p> <ol style="list-style-type: none"> 3. Describe how packets in the Internet are delivered. Analyze the contents in a given data link layer packet, based on the layer concept. 4. Design logical sub-address blocks with a given address block. Decide routing entries given a simple example of network topology. 5. Describe what classless addressing scheme and how routing protocols work.
11	MSCS -203C	Computer Graphics	2017	<ol style="list-style-type: none"> 1. The course introduces the basic concepts of computer graphics. It provides the necessary theoretical background and demonstrates the application of computer science to graphics. The course further allows students to develop programming skills in computer graphics through programming assignments. 2. Understands the core concepts and mathematical foundations of computer graphics knows fundamental computer

				<p>graphics algorithms and data structures.</p> <ol style="list-style-type: none"> Has an overview of different modeling approaches and methods and has detailed knowledge about basic shading and texture mapping techniques. Understands light interaction with 3D scenes.
12	MSCS- 204 GE – A	E- Commerce	2017	<ol style="list-style-type: none"> Understand the basic concepts and technologies used in the field of management information systems. Have the knowledge of the different types of management information systems. Understand the processes of developing and implementing information systems. Be aware of the ethical, social, and security issues of information systems;
13	MSCS- 204 GE B	Accounting And Financial Management	2017	<ol style="list-style-type: none"> Use of Accounting information to managers within the organization. Informs the business decision & control the Management Functions.
14	MSCS- 205CF	Human Rights And Value Education	2017	<ol style="list-style-type: none"> understand the historical growth of the idea of human rights.

				<ol style="list-style-type: none"> 2. demonstrate an awareness of the international context of human rights. 3. demonstrate an awareness of the position of human rights in the UK prior to 1998. 4. understand the importance of the Human Rights Act 1998, analyse and evaluate concepts and ideas.
15	MSCS- 206 EF A	Principles Of Management	2017	<ol style="list-style-type: none"> 1. Understand the concepts related to Business. 2. Demonstrate the roles, skills and functions of management. 3. Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. 4. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.
16	MSCS- 206 EF B	Internet Of Things	2017	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet

				<p>in Mobile Devices, Cloud & Sensor Networks.</p> <p>3. Able to understand building blocks of Internet of Things and characteristics.</p>
17	MSCS-301C	Data Warehousing and Data Mining	2017	<ol style="list-style-type: none"> 1. Understand the functionality of the various data mining and data warehousing component. 2. Appreciate the strengths and limitations of various data mining and data warehousing models. 3. Explain the analyzing techniques of various data. 4. Describe different methodologies used in data mining and data ware housing. 5. Compare different approaches of data ware housing and data mining with various technologies.
18	MSCS-302C	Web Technologies	2017	<ol style="list-style-type: none"> 1. Analyze a web page and identify its elements and attributes. 2. Create web pages using XHTML and Cascading Style Sheets. 3. Build dynamic web pages using

				<p>JavaScript (Client side programming). Create XML documents and Schemas.</p> <p>4. Build interactive web applications using AJAX.</p>
19	MSCS-303C	Software Engineering	2017	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements. 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse

20	MSCS -304- GE-A	Systems Programming	2017	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming. 4. Ability to devise, select, and use modern techniques and tools needed for the design and implementation of system programs.
21	MSCS -304- GE-B	Computer Algorithms	2017	<ol style="list-style-type: none"> 1. Apply design principles and concepts to algorithm design (c) 2. Have the mathematical foundation in analysis of algorithms (a, j)

				<ul style="list-style-type: none"> 3. Understand different algorithmic design strategies (j) 4. Analyze the efficiency of algorithms using time and space complexity theory (b)
22	MSCS -304-GE-C	UID Using .Net Technologies	2017	<ul style="list-style-type: none"> 1. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed, or executed remotely. 2. Build all communication on industry standards to ensure that code based on .NET Framework integrates with any other code. 3. Building multi-tier enterprise applications. 4. Client-side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.
23	MSCS -304-GE-D	IT in Forensic Science	2017	<ul style="list-style-type: none"> 1. Approach analysis of evidence without bias. 2. Develop a conceptual understanding of criminal justice system, rules of evidence,

				<p>legal system.</p> <p>3. develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation and scientific laboratory procedures can be applied to immediate employment or advanced study.</p>
24	MSCS -304-GE-E	Software Testing	2017	<p>1. Various test processes and continuous quality improvement, Types of errors and fault models.</p> <p>2. Methods of test generation from requirements.</p> <p>3. Behavior modeling using UML: Finite state machines (FSM), Test generation from FSM models, Input space modeling using combinatorial designs.</p> <p>4. Combinatorial test generation, Test adequacy assessment using: control flow, data flow, and program mutations, The use of various test tools.</p> <p>5. Application of software testing</p>

				techniques in commercial environments.
25	MSCS -305 GE-A	Cloud Computing	2017	<ol style="list-style-type: none"> 1. Understand the concepts, characteristics, delivery models and benefits of cloud computing 2. Understand the key security and compliance challenges of cloud computing 3. Understand the key technical and organisational challenges 4. Understand the different characteristics of public, private and hybrid cloud deployment models.
26	MSCS -305 GE-B	Big Data Analytics	2017	<ol style="list-style-type: none"> 1. Understand Big Data and its analytics in the real world, Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. 2. Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm, Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to

				<p>generate analytics.</p> <p>3. Implement Big Data Activities using Hive.</p>
27	MSCS -305 GE-C	Artificial Neural Networks	2017	<p>1. Know the main provisions neuro mathematics, Know the main types of neural networks;</p> <p>2. Know and apply the methods of training neural networks;</p> <p>3. Know the application of artificial neural networks;</p> <p>4. To be able to formalize the problem, to solve it by using a neural network.</p>
28	MSCS -305 GE-D	Cyber Security	2017	<p>1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.</p> <p>2. Design, develop, test and evaluate secure software.</p> <p>3. Develop policies and procedures to manage enterprise security risks.</p> <p>4. Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering</p>

				<p>vulnerabilities and training.</p> <p>5. Interpret and forensically investigate security incidents.</p>
29	MSCS -305 GE-E	Mobile App Development	2017	<ol style="list-style-type: none"> 1. Describe those aspects of mobile programming that make it unique from programming for other platforms, 2. Critique mobile applications on their design pros and cons, 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic and advanced phone features, and 5. Deploy applications to the Android marketplace for distribution.

47. Commerce

M.Com (Regular)

S. No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2017	<ul style="list-style-type: none"> i. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation ii. Impart the ability to find out the cash flows and provide the skills to value goodwill iii. Create awareness about IFRS and segment reporting
2	102.	Financial Management	2017	<ul style="list-style-type: none"> i. Describe meaning, functions and objectives; role of financial manager. ii. Examine investment decision, capital budgeting, techniques of CB and methods of CB. iii. Investigate management of working capital, needs and concepts. iv. Asses financing decision, capital structure and capital theories. v. Design dividend decision and theories of dividend.
3	103.	Business Environment and Policy	2017	<ul style="list-style-type: none"> i. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment. ii. Illustrates economic environment nature and scope and new economic policy. iii. Develop political, legal environment; reasons for state intervention and

				<p>government business interface.</p> <p>iv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>v. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2017	<p>i. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>ii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>iii. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2017	<p>i. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>ii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p>

				<ul style="list-style-type: none"> iii. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.
7	201	Advanced cost Accounting	2017	<ul style="list-style-type: none"> i. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; ii. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. iii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. iv. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2017	<ul style="list-style-type: none"> i. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. ii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. iii. Create plans and understand the metrics for getting finance from

				venture capital firms.
9	203.	Strategic Financial Management	2017	<ul style="list-style-type: none"> i. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, ii. Explain Strategic financial management success factors and constraints. iii. Illustrate corporate valuation approaches and guidelines; value based management. iv. Identify financial distress and restructuring; countering financial distress. v. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2017	<ul style="list-style-type: none"> i. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. ii. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India. iii. Discern knowledge on the composition of Board of Directors and

				<p>Audit Committees and know the role of internal Auditors in India.</p> <p>iv. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2017	<p>i. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>ii. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>iii. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2017	<p>i. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>ii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>iii. Categorize the financial frauds in e-banking sector.</p>
13	301	Security	2017	<p>i. Find security analysis, basics of investment and objectives;</p>

		Analysis and Portfolio Management		<p>fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>ii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>iii. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2017	<p>i. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>ii. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>iii. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>iv. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a.	Tally with GST Application	2017	<p>i. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>ii. To understand basics of GST system and to know steps involved in</p>

				<p>generating GSTR reports.</p> <p>iii. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c.	Tax planning & Management	2017	<p>i. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>ii. Acquire the knowledge on tax planning with regard to location</p> <p>iii. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2017	<p>i. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>ii. To help the students to acquire the skills of financial statement analysis</p> <p>iii. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2017	<p>i. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p>

				<ul style="list-style-type: none"> ii. Prioritise options in financial derivatives and option pricing models. iii. Compose swap market futures, types and interest rate; pricing swaps. iv. Synthesize stock index futures, options and trading of stock futures and options.
20	402.	Project Planning & Control	2017	<ul style="list-style-type: none"> i. Define a project and operations of corporate long range planning and phases of capital budgeting. ii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting. iii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project. iv. Understand Social cost benefit analysis and methods of SCBA v. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.
21	403a.	Insurance Management	2017	<ul style="list-style-type: none"> i. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector. ii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance. iii. Understand different types of non-life insurance with reference to

				<p>marine and fire insurance and their progress and claim settlement thereon.</p> <p>iv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>v. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2017	<p>i. Learn the basic concepts of Indian securities market.</p> <p>ii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>iii. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.</p>

M.Com Accounting & Finance

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2017	<p>iv. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>v. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>vi. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2017	<p>vi. Describe meaning, functions and objectives; role of financial manager.</p> <p>vii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>viii. Investigate management of working capital, needs and concepts.</p> <p>ix. Asses financing decision, capital structure and capital theories.</p> <p>x. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2017	<p>vi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>vii. Illustrates economic environment nature and scope and new economic policy.</p> <p>viii. Develop political, legal environment; reasons for state intervention and government business interface.</p>

				<p>ix. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>x. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2017	<p>iv. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>v. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>vi. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2017	<p>iv. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>v. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>vi. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>

7	201	Advanced cost Accounting	2017	<ul style="list-style-type: none"> v. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; vi. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. vii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. viii. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2017	<ul style="list-style-type: none"> iv. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. v. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. vi. Create plans and understand the metrics for getting finance from venture capital firms.

9	203.	Strategic Financial Management	2017	<p>vi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>vii. Explain Strategic financial management success factors and constraints.</p> <p>viii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>ix. Identify financial distress and restructuring; countering financial distress.</p> <p>x. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2017	<p>v. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>vi. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>vii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>viii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2017	<p>iv. To impart basic knowledge on working capital concepts and source of WCand to provide the skills to estimate working capital</p>

				<ul style="list-style-type: none"> v. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management. vi. To provide the skills of inventory management with different techniques.
12	206a	e-Banking Operations	2017	<ul style="list-style-type: none"> iv. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India. v. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits o e-banking applications. vi. Categorize the financial frauds in e-banking sector.
13	301	Security Analysis and Portfolio Management	2017	<ul style="list-style-type: none"> iv. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models. v. Illustrate portfolio theory, CAPM, SMLand APT models and investigate portfolio evaluation; sharpe's, treynor's and Jensen's performance index. vi. Synthesize portfolio revision, need and strategies.
14	302.	Accounting for Managerial Decisions	2017	<ul style="list-style-type: none"> v. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different

				<p>managerial decisions influencing short and long-term financing.</p> <p>vi. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>vii. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>viii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2017	<p>iv. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>v. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>vi. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2017	<p>iv. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>v. Acquire the knowledge on tax planning with regard to location</p> <p>vi. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of	2017	<p>iv. To provide basic knowledge on accounting and its preparation and enable</p>

		Accounting		<p>the students to prepare final accounts</p> <p>v. To help the students to acquire the skills of financial statement analysis</p> <p>vi. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2017	<p>v. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>vi. Prioritise options in financial derivatives and option pricing models.</p> <p>vii. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>viii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2017	<p>vi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>vii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>viii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>ix. Understand Social cost benefit analysis and methods of SCBA</p> <p>x. Contrast public projects context of Indian projects, approval procedure and</p>

				guidelines for preparation of feasibility report.
21	403a	Insurance Management	2017	<p>vi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>vii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>viii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>ix. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>x. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2017	<p>iv. Learn the basic concepts of Indian securities market.</p> <p>v. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>vi. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.</p>

Financial Management

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2017	<p>vii. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>viii. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>ix. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2017	<p>xi. Describe meaning, functions and objectives; role of financial manager.</p> <p>xii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>xiii. Investigate management of working capital, needs and concepts.</p> <p>xiv. Asses financing decision, capital structure and capital theories.</p> <p>xv. Design dividend decision and theories of dividend.</p>

3	103.	Business Environment and Policy	2017	<p>xi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>xii. Illustrates economic environment nature and scope and new economic policy.</p> <p>xiii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>xiv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>xv. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2017	<p>vii. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>viii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>ix. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business	2017	<p>vii. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>viii. Formulate F distribution and multiple co-relations co-efficient and</p>

		Decisions		<p>study probability and non-probability distributions.</p> <p>ix. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost Accounting	2017	<p>ix. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>x. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>xi. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>xii. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2017	<p>vii. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>viii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.</p> <p>ix. Create plans and understand the metrics for getting finance from venture</p>

				capital firms.
9	203.	Strategic Financial Management	2017	<p>xi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>xii. Explain Strategic financial management success factors and constraints.</p> <p>xiii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>xiv. Identify financial distress and restructuring; countering financial distress.</p> <p>xv. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2017	<p>ix. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>x. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>xi. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>xii. Understand the CG standards and practices in India with focus on IT and</p>

				futures of CG in India.
11	205a	Working Capital Management	2017	<p>vii. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>viii. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>ix. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2017	<p>vii. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>viii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>ix. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2017	<p>vii. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>viii. Illustrate portfolio theory, CAPM, SML and APT models and</p>

				<p>investigate portfolio evaluation; sharpe's, treynor's and Jensen's performance index.</p> <p>ix. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2017	<p>ix. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>x. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>xi. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>xii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2017	<p>vii. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>viii. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>ix. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning &	2017	<p>vii. To comprehend the basic knowledge about tax concepts and planning and</p>

	.	Management		<p>To provide knowledge on sources of income under different heads</p> <p>viii. Acquire the knowledge on tax planning with regard to location</p> <p>ix. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2017	<p>vii. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>viii. To help the students to acquire the skills of financial statement analysis</p> <p>ix. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2017	<p>ix. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>x. Prioritise options in financial derivatives and option pricing models.</p> <p>xi. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>xii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2017	<p>xi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p>

				<p>xii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>xiii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>xiv. Understand Social cost benefit analysis and methods of SCBA</p> <p>xv. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a	Insurance Management	2017	<p>xi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>xii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>xiii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>xiv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>xv. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market	2017	<p>vii. Learn the basic concepts of Indian securities market.</p>

		Operations		<p>viii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>ix. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>
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48. B. Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BPH 101A	Mathematics (For Bi.P.C. Stream)	2017	<ol style="list-style-type: none"> 1. This program shall create an awareness about the mathematical problems, to develop an statistical evaluation. 2. To adopt skills in identifying and solving problems. 3. Know the theory and their application in Pharmacy research 4. Solve the different types of problems by applying theory in drug discovery

2	BPH 101B	Biology (For M.P.C. Stream)	2017	
3	BPH 101C	Biology Practicals (For M.P.C. Stream)	2017	
4	BPH 102	English & Soft Skills	2017	<p>1.To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation. To help students overcome stage fear and take questions.</p> <p>2.To enable the students to become global citizens.</p> <p>3.This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers.</p> <p>4.At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and add value to the pharmaceutical business.</p>
5	BPH 103	Pharmaceutical. Inorganic Chemistry	2017	<p>1.To understand the history and concept of pharmacopoeia and its editions.</p> <p>2. Knowledge about the sources of impurities and methods to determine the impurities in inorganic pharmaceuticals.</p> <p>3. Identification of limit tests of different</p>

				<p>pharmaceutical inorganic compounds.</p> <p>4. To understand the method to prepare inorganic pharmaceuticals.</p> <p>5. To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.</p> <p>6. To discuss the handling and applications of radiopharmaceuticals.</p>
6.	BPH 104	Pharmaceutical Organic Chemistry-I	2017	<p>1. Guess and write the structure, systematic/ trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds.</p> <p>2. Understand the general concept of isomerism and distinguish structural isomers.</p> <p>3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests.</p> <p>4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified.</p> <p>5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms</p>

7.	BPH 105	Human Anatomy and Physiology	2017	<p>1. Know the fundamental knowledge on the structure and functions of the various systems of the human body.</p> <p>2. understanding all the homeostatic mechanisms of the body</p> <p>3. Understand the relationship of anatomy with various disciplines of pharmacy.</p> <p>4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition</p>
8.	BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2017	<p>1. To recall the sources of limit tests, preparation and identification of compounds.</p> <p>2. To demonstrate the preparation of inorganic pharmaceuticals</p> <p>3. To apply knowledge to perform modified limit tests.</p> <p>4. To analyze various inorganic pharmaceutical compounds.</p> <p>5. To select suitable method for the preparation of inorganic pharmaceuticals.</p> <p>6. To assess quality of inorganic pharmaceuticals.</p>

9.	BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2017	<p>1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes</p> <p>2. Get hands- on- experience in basic techniques of organic synthesis</p>
10.	BPH 108	Human Anatomy and Physiology Practicals	2017	<p>1. Differentiate the structures of the various systems of the human body.</p> <p>2. Perform the experiments like blood cell count, hemoglobin content, bleeding and clotting time and various physiological Parameters theoretically and practically.</p> <p>3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system</p>
11	BPH 109	General & Dispensing Pharmacy	2017	Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product

12	BPH 110	Pharmaceutical Organic Chemistry-II	2017	<p>1. Guess and write the structure, systematic/ trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds.</p> <p>2. Understand the general concept of isomerism and distinguish structural isomers.</p> <p>3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests.</p> <p>4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified.</p> <p>5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms</p>
13	BPH 111	Computer applications	2017	<p>1 know the various types of application of computers in pharmacy profession</p> <p>2. know the various types of databases used in profession</p> <p>3. know the usage of softwares in pharmacy</p>
14	BPH 112	Pharmacognosy I	2017	The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how

				to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.
15	BPH 113	Human Anatomy and Physiology and Pathophysiology	2017	<p>1. Identifies Name the signs, symptoms and complications of the diseases.</p> <p>2. Students Get thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms.</p> <p>3. To Study the aetiology and pathogenesis of the selected disease states</p> <p>4. The baseline knowledge required to practice medicine safely, confidently, rationally and effectively.</p>
16	BPH 114	General & Dispensing Pharmacy Practicals	2017	This is help to understand the basic information of formulation process and how to optimise quality control solid, semisolid and parenteral dosage forms

17	BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2017	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class
18	BPH 116	Computer applications Practicals	2017	<ol style="list-style-type: none"> 1. know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
19	BPH 117	Pharmacognosy I Practicals	2017	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents by use chromatographic technique
20	BPH 201	Physical pharmacy –I (Theory)	2017	<ol style="list-style-type: none"> 1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. 2. Theory and practical components of the subject

				help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.
21	BPH 202	Pharmaceutical Engineering (Theory)	2017	<ol style="list-style-type: none"> 1. To know various unit operations involved in manufacturing of pharmaceuticals. 2. To understand the concepts of flow of fluids, size reduction and size separation. 3 To perform different mechanisms of heat transfer. 4 To compare and contrast different types of evaporation and distillation process. 5 To determine the factors influencing mixing, filtration and centrifugation. 6 To elaborate various preventive methods used for corrosion control in pharmaceutical industries.
22	BPH 203	Pharmaceutical organic chemistry III (Theory)	2017	<ul style="list-style-type: none"> • Guess and write the structure according to the stereochemical specifications. • Fairly understand the aspects of heterocyclic chemistry in terms of naming

				<p>and reactivity.</p> <ul style="list-style-type: none"> Assess and understand the pharmaceutical applications and importance of the specified named reactions.
23	BPH 204	Pharmaceutical Biochemistry (Theory)	2017	<p>1. Understand the principles of various fields of chemistry and biology (organic chemistry, analytical chemistry, biochemistry, genetics, metabolism, and molecular biology)</p> <p>2. Develop as independent thinkers who are responsible for their own learning. Develop transferable quantitative skills.</p>
24	BPH 205	Environmental studies (Theory)	2017	<p>This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment.</p> <p>2 To compare the natural, renewable and non-renewable resources and the problems associated with them.</p> <p>3 To motivate the learners to participate in environment protection and improvement.</p> <p>4 To analyze the concepts of eco system</p>

				<p>including structure and functions.</p> <p>5 To adopt skills in identifying and solving environmental problems.</p> <p>6 To develop an attitude of concern for the environment</p>
25	BPH 206	Physical pharmacy –I (Practical)	2017	<p>This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods</p>
26	BPH 207	Pharmaceutical Engineering (Practical)	2017	<p>To understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying.</p> <p>2. To demonstrate and explain about the construction, working and applications of pharmaceutical equipment's such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer.</p> <p>3. To experiment with the process variables of filtration, evaporation and infer the same.</p> <p>4. To determine radiation constant of brass, iron, unpainted and painted glass.</p> <p>5. To determine overall heat transfer coefficient</p>

				<p>by heat exchanger and calculate the efficiency of steam distillation.</p> <p>6. To estimate moisture content, loss on drying and construct drying curves for calcium carbonate and starch.</p>
27	BPH 208	Pharmaceutical organic chemistry III (Practical)	2017	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers. 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms

28	BPH 209	Pharmaceutical Biochemistry (Practical)	2017	<p>.1. Understand the principles of various fields of chemistry and biology (organic chemistry, analytical chemistry, biochemistry, genetics, metabolism, and molecular biology)</p> <p>2. Develop as independent thinkers who are responsible for their own learning.</p> <p>3. Develop transferable quantitative skills.</p>
29	BPH 210	Physical Pharmacy II (Theory)	2017	<p>1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations.</p> <p>2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms</p>
30	BPH 211	Pharmaceutical Analysis I (Theory)	2017	<p>1) To understand selected instrumental analytical techniques (spectroscopic and chromatographic methods) and differentiate with volumetric analysis.</p> <p>To gain knowledge on interaction of EMR with</p>

				<p>matter and to build the analytical understanding at the level of atom, group and molecular structure of organic and inorganic compounds with different functional groups and their applications in pharmacy.</p> <p>3) To maximize knowledge on characterization and estimation of ions by spectroscopical techniques</p> <p>4) To simplify affinity of matter with stationary phase and mobile phase, physical and chemical.</p>
31	BPH 212	Pharmaceutical Technology I (Theory)	2017	<ol style="list-style-type: none"> 1. basic concepts in the field of drug delivery systems that is used in Pharmaceutical Technology. 2. uses pharmaceutical information sources medical 3. Lists in the form of liquid drug delivery systems. 4. Defines the concepts of dissolution, solubility and stability. 5. Design Solution formulations.
32	BPH 213	Pharmacognosy II (Theory)	2017	<p>This subject is intended to impart students about the fundamental knowledge of how the</p>

			<p>secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p> <ol style="list-style-type: none"> 1. Significance of pharmacognostic parameters & study of crude drugs. 2. Understand the underlying reason of evolutionary significance of secondary metabolites production in plants & other organisms & deduce their significance as medicinal molecules. 3. How these primary metabolites are used comprehensively as a source to develop Pharmaceutical & industrial applications. <p>Study about the source, name, chemical structures, methods of extraction, qualitative & quantitative analysis of glycosides & tannin compounds of plant origin.</p>
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33	BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2017	<ol style="list-style-type: none"> 1. Thorough Knowledge on Bioinformatics and its classification. 2. Importance of of drug discovery, lead molecules in the preparation of drugs in pharmaceutical industries. 3. Good information about drug design, ligand – receptor mechanism and its applications. 4. How this subject is collaborate with other disciplinary subjects, Understanding Genomics & transcriptomics.
34	BPH 215	Pharmaceutical pharmacy II (Practical)	2017	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods
35	BPH 216	Pharmaceutical Analysis I (Practical)	2017	<ol style="list-style-type: none"> 1. Discusses the effect of impurities on the quality of drugs and behavioural pattern of drugs 2. Aids in understanding the SOP and usage of software associated with various analytical instruments <p>Helps in gaining knowledge of interpretation of</p>

				spectra and of chromatograms
36	BPH 217	Pharmaceutical technology I (Practical)	2017	<ol style="list-style-type: none"> 1.Preparing the solutions 2.Preparing the emulsions 3.Preparing the syrups 4.Preparing the semisolid dosage forms
37	BPH 218	Pharmacognosy II (Practical)	2017	<ol style="list-style-type: none"> 1. Demonstrate chemical tests to identify unorganized crude drugs 2. Evaluate the quality and purity of crude drugs 3. Perform linear measurements for crude drug identification <p>Develop quality control methods for standardisation of herbal drugs</p>
38	BPH 301	Pharmaceutical Technology-II	2017	Course enables the student to understand and appreciate the influence of pharmaceutical manufacture of various pharmaceutical dosage forms on the performance of the drug product by use of specific technology
39	BPH 302	Medicinal chemistry - I	2017	<ol style="list-style-type: none"> 1. Gain knowledge on physicochemical and biological aspects of various drug classes.

				<p>2. Judge the effect of structural medications with respect to biological activity</p> <p>Develop awareness about the application of organic synthesis with respected preparation of drugs</p>
40	BPH 303	Pharmacology - I	2017	<p>1. Gain knowledge on pharmacokinetic and pharmacodynamic aspects of drugs in general.</p> <p>2. Develop understanding about physiological, pathological, and pharmacological concepts of nervous system.</p>
41	BPH 304	Pharmaceutical microbiology	2017	<p>1.To know the various types of sterile products with their formulation in large scale industries.</p> <p>2.To acquire knowledge on GMP standards sanitation, personal hygiene in sterile product manufacturing facilities.</p>
41	BPH 305	Drug store and Industrial Management and Marketing	2017	<p>1.This course helps to understand the students how to establish the drug store and functioning the proper channels and also procurement and dispensing of drugs procedure as per government norms.</p> <p>2. Gain knowledge on functioning and management of pharma industry and know the regulating process in all aspects</p>

42	BPH 306	Pharmaceutical Technology-II	2017	This course helps to Identify, formulate, research on pharmaceutical solid and parenteral dosage form and solve complex problems in quality control of product
43	BPH 307	Medicinal chemistry-I practicals	2017	This course helps to how to separation and identification compound given unknown mixture. It imparts take it knowledge on crude separation and identification technique
44	BPH 308	Pharmaceutical Microbiology practicals	2017	1.This course help to able to understand the different levels of microorganism growthat different conditions. 2.Gain knowledge of the various types of sterile products with their formulation in large scale industries and acquire knowledge on GMP standards sanitation, personal hygiene in sterile product manufacturing facilities
45	BPH 309	Medicinal chemistry-II (theory)	2017	1.Gain knowledge on physicochemical and biological aspects of various drug classes. 2.Judge the effect of structural modification with respect to biological activity 3.Develop awareness about the application of organic synthesis with respected preparation of drugs

46	BPH310	Pharmacology II– Theory	2017	<ol style="list-style-type: none"> 1. In continuation with the previous semester, this subject would have continued describing about the different drugs used for the treatment of diseases. 2. Students understood the mechanism of drug action and its relevance in the treatment of different diseases. 3. Have understood about the drugs used to treat respiratory disorders, metabolic disorders, coagulants and anti-coagulants. 4. Recognise and explain the rationales behind the use of widely used, national organization approved treatment for the management and treatment of common diseases and conditions. 5. Gained knowledge on the new targets of several disease conditions for the treatment
47	BPH311	Pharmaceutical. Analysis II(Theory)	2017	<ol style="list-style-type: none"> 1. Gain knowledge on identification of functional groups of various drugs and other excipients. 2. Judge the chemical interaction between the compound that effect on structural modification ions with respect to biological activity 3. Develop awareness about the analytical equipment which are help to obtain a good quality control of pharmaceutical formulation as per pharmacopeia's

48	BPH312A	Forensic Pharmacy– Theory	2017	<p>1.To recall the pharmaceutical legislations, ethics, right to information, medical termination of pregnancy and intellectual property rights.</p> <p>2.To relate the significance of Drugs and cosmetics act 1940 and its rules 1945 in relation to import and manufacture of drugs.</p> <p>3. To apply the knowledge on schedules pertaining to Drugs and cosmetics act 1940 and its rules 1945 and also administration of the act and rules.</p> <p>4. To understand the functions of pharmacy councils and implementation of education regulations in pharmacy.</p> <p>5. To appraise the importance of medicinal and toilet preparations act and narcotic drugs and psychotropic substances act and rules.</p> <p>6 To discuss the salient features of drugs and magic remedies act, prevention of cruelty to animals’ act and drugs price control order.</p>
49	BPH312B	Clinical Trials– Theory	2017	<p>1.Know the regulatory requirements for conducting clinical trial</p> <p>2.To understand the various types of clinical trial</p>

				<p>designs</p> <p>3.To gain knowledge on basic concepts and establishment of pharmacovigilance</p> <p>4.To know the ADRreporting, methods and tools used in pharmacovigilance</p>
50	BPH312 C	Industrial.Pharmacy & Cosmetic Technology– Theory	2017	
51	BPH313	Medicinal Chemistry-II Practicals	2017	<p>This course helps to how to separation and identification compound given unknown mixture.</p> <p>It imparts take it knowledge on crude separation and identification technique</p>
52	BPH314	Pharmacology-II Practicals	2017	<p>1.Handling of different instruments used in Experimental Pharmacology.</p> <p>2.Know about the different routes of drug administration, blood withdrawal etc.,</p> <p>3.Evaluate the different activities on animals.</p> <p>4.Demonstration of different simulation methods.</p> <p>5.They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments.</p>
53	BPH315	Pharmaceutical. Analysis II Practicals	2017	1.Handling of different analytical instruments.

				<p>2. Know about the different spectroscopy and chromatography techniques that helps to attain desired quality control of all pharmaceutical aspects as per the standard pharmacopoeias</p> <p>5. Finally learnt to apply the knowledge to make good stability of pharmaceutical product by using of pharmaceutical analytical technical method.</p>
54	BPH 401	Medicinal Chemistry-III	2017	<ol style="list-style-type: none"> 1. To develop an understanding of the physico-chemical properties of drugs. 2. To understand how current drugs were developed by using pharmacophore modelling and docking technique. 3. To acquire knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents. 4. To acquire knowledge about the mechanism pathways of different class of medicinal compounds. 5. To have been introduced to a variety of drug classes and some pharmacological properties. 6. To acquire knowledge on thrust areas fir

				further research
55	BPH 402:	Pharmacology-III	2017	<ol style="list-style-type: none"> 1. Students would have understood the pharmacological actions of different categories of drugs 2. They would have studied in detailed about mechanism of drug action at organ system/sub cellular/ macromolecular levels. 3. They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases. 4. They would have observed the effect of drugs on animals by simulated experiments 5. They would get an idea about correlation of pharmacology with other bio medical sciences. 6. They would have understood the signal transduction mechanism of various receptors
56	BPH 403:	Pharmacognosy-III	2017	<ol style="list-style-type: none"> 1. Terpenes, Polyphenols, Alkaloids, Pharmacology, Toxicity, 2. Formulations and Preparations of Herbal Medicines. 3. How herbs influence our physiology and can be helpful against several disorders.

				DNA Finger printing.
57	BPH 404:	Biopharmaceutics & Pharmacokinetics	2017	<ol style="list-style-type: none"> 1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and them 2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, 3. To understand the concepts of bioavailability and bioequivalence of drug products and them <p>Understand various pharmacokinetic parameters, their significance & applications</p>
58	BPH 405A:	Chemistry Of Natural Products	2017	<ol style="list-style-type: none"> 1. To attain detailed knowledge about chemistry of medicinal compounds from natural origin. 2. To understand general methods of structural elucidation of medicinally active natural compounds. 3. To attain knowledge regarding isolation and purification of medicinal compounds from natural origin.
59	BPH 405B:	Hospital & Community Pharmacy	2017	<ol style="list-style-type: none"> 1. Discuss the roles and responsibilities of hospital pharmacist, hospital drug policies and guidelines for hospital pharmacy

				<ol style="list-style-type: none"> 2. Discuss various drug distribution methods in a hospital pharmacy 3. Apply various methods of inventory control 4. Formulate parenteral preparations Contribute to a newsletter for providing continuous education and awareness 5. Explain about handling and packaging of radiopharmaceuticals
60	BPH 405C	Pharmacovigilance	2017	<ol style="list-style-type: none"> 1. Explain the regulatory requirements for conducting clinical trial 2. Describe in detail about various types of clinical trial designs 3. Explain the responsibilities of key players involved in clinical trials 4. Describe the documentational requirements for Clinical trials 5. Explain Adverse drug reaction and its management 6. Describe basic concepts, and establishment of Pharmacovigilance 7. Explain ADR reporting, methods and tools used in Pharmacovigilance

				8. Describe Pharmacoeconomics and safety pharmacology Pharmacoepidemiology,
61	BPH 406	Medicinal Chemistry-III Practicals	2017	<p>Synthesis compounds of medicinal interest</p> <p>2. Conduct monograph analysis of the pharmaceutical compounds</p> <p>3. Determine the amount of drug present in an unknown solution</p> <p>4. Estimate the purity of drugs by performing assays</p> <p>5. Determine partition coefficient and dissociation constant of a given compound</p> <p>6. Conduct planned experiments and prepare laboratory report in a standard format</p>
62	BPH 407	Pharmacology-III Practicals	2017	<p>1. Demonstrate intraperitoneal and intramuscular routes of administration of drugs in animals and describe different anaesthetics used in laboratory animals</p> <p>2. Identify and select laboratory appliances used in experimental pharmacology</p> <p>3. Recommend the physiological salt solution for different isolated tissue preparations</p> <p>4. Perform a bioassay procedure and create a Dose Response Curve</p> <p>5. Demonstrate the screening of a</p>

				<p>drug for CNS activity</p> <p>6. Conduct planned experiments and prepare laboratory report in a standard format</p>
63	BPH 408	Pharmacognosy-III Practicals	2017	<p>1. Identify cell wall constituents and cell inclusions</p> <p>2. Identify the crude drugs by its morphological characteristics and study the anatomical characters by preparing slides</p> <p>3. Perform chemical tests to identify unorganized crude drugs and lipids</p> <p>4. Prepare herbarium sheets</p> <p>5. Conduct planned experiments and prepare laboratory report in a standard format</p>
64	BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2017	<p>1. Compare the in-vitro drug release profile of different marketed products</p> <p>2. Perform the solubility enhancement techniques for improvement of drug release of poorly water-soluble drugs</p> <p>3. Estimate the bioavailability (absolute and relative) and bioequivalence from the given clinical data</p> <p>4. Calculate the drug content in blood sample using Area Under Curve approach</p> <p>5. Calculate and interpret various pharmacokinetic</p>

				parameters from the given clinical data
65	BPH 410:	Novel Drug Delivery Systems	2017	<ol style="list-style-type: none"> 1. The use raw data and derive the pharmacokinetic models 2. and parameters the best describe the process of drug absorption, distribution, metabolism and elimination. 3. The critical evaluation of biopharmaceutic studies involving drug product equivalency. 4. The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters. 5. The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic
66	BPH 411	Pharmaceutical Biotechnology (Theory)	2017	<ol style="list-style-type: none"> 1. To know the basics of biotechnology techniques and the various systems used. 2. To understand the method of genetic engineering for production of rDNA products including monoclonal antibodies. 3. To clarify application of geetic engineering in animals. 4. To understand enzymes and their uses by

				<p>immobilization.</p> <p>5. To illustrate the use of fermenter for the production of fermentation products and purification by downstream process.</p>
67	BPH 412:	Clinical Pharmacy & Therapeutics	2017	<ol style="list-style-type: none"> 1. Ability to apply the concepts of Pharmacokinetics to individualize the drug dosage regimen in clinical settings. 2. Ability to design a dosage regimen of a drug based on its route of administration 3. Ability to design and implement pharmacokinetic services 4. Intravenous to Oral conversion of dosage regimens
68	BPH 413:	Comprehensive Viva Voce	2017	<ol style="list-style-type: none"> 1. There shall be a Comprehensive Viva-Voce in IV-year II semester. The Comprehensive Viva-Voce will be conducted by a committee consisting of Head of the Department and two Senior Faculty members of the Department. 2. The Comprehensive Viva-Voce is intended to assess the students understanding of the subjects he studied during the B. Tech. course of study. 3. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee.

				There are no internal marks for the Comprehensive Viva-Voce.
69	BPH 414:	Project Work & Seminar	2017	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Bachelor of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.

M.Pharmacy (Pharmacology)

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2017	<ol style="list-style-type: none"> 1. Describe the instruments in experimental pharmacology. 2. Know CPCSEA guidelines and OECD guidelines. 3. Know animal physiology with their biochemical reference values in various animal species. 4. Do collection of blood, body fluids and urine from experimental animals. 5. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
2	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2017	<ol style="list-style-type: none"> 1. The pathophysiology of selected disease states and the rationale for drug therapy. 2. The controversies in drug therapy. 3. The importance of preparation of individualized therapeutic plans based on

				<p>diagnosis.</p> <p>4. Understanding the concepts of Clinical research; Therapeutic drug monitoring (TDM); concepts of Pharmacotherapeutics, Management & Current Good Clinical Practice of various diseases.</p> <p>5. Studying of various types, mechanisms of Drug interaction; rational for drug combinations; Drug Toxicity and its prevention; Adverse drug reactions and its monitoring</p>
3	MPH 103	Practical 1	2017	<p>1. Recording of concentration response curve (CRC) of acetylcholine</p> <p>2. Record of the CRC of 5-HT on rat fundus preparation.</p> <p>3. Record of the CRC of histamine on guinea pig ileum</p> <p>4. Inotropic and chronotropic effects of drugs on isolated frog heart</p>
4	MPH 104	Practical-II(MAT)	2017	<p>1. Explains the importance of modern instrumentation in pharmaceutical analysis</p> <p>2. Describes the fundamental principles and</p>

				<p>applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR.</p> <p>3. Discusses the principle and applications of chromatographic techniques</p> <p>4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms</p>
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2017	<p>1. Explains the importance of modern instrumentation in pharmaceutical analysis</p> <p>2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR.</p> <p>3. Discusses the principle and applications of chromatographic techniques</p> <p>4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional	2017	1. Awareness of ethical issues and basic

		Ethics-I		<p>ethical approaches.</p> <ol style="list-style-type: none"> 2. Improved writing skills and understanding of ethical conflict. 3. Enables students to develop ability for moral reasoning and act with ethical deliberations. 4. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas. 5. Learn how to live peacefully
7.	MPH 107	Comprehensive Viva	2017	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the structure and functions of the various systems of the human body. 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy. 4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and

				composition
8.	MPH 201A (Pharmacology)	Pharmacology	Molecular	2017
				<ol style="list-style-type: none"> 1. Explain the modes of action of drug at the cellular level by describing their interactions with target proteins 2. Explain the receptor signal transduction processes. 3. Explain the molecular pathways affected by drugs. 4. Understanding the applicability of molecular pharmacology and biomarkers in drug discovery process. 5. Outline the molecular features that are responsible for agonist and antagonist binding, and coupling to effector processes, with reference to the nicotinic, muscarinic, and β-adrenergic receptors
9.	MPH 202 A	Methods in Drug Evaluation		2017
				<ol style="list-style-type: none"> 1. Know the commonly used instruments in experimental pharmacology. 2. describe the animal physiology with their biochemical reference values in various animal species. 3. Study of methods for collection of blood,

				<p>body fluids and urine from experimental animals.</p> <p>4. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).</p>
10.	MPH 203	Practical 1	2017	<p>1. Calculation of the PA_2 Calculate the PA_2 Value</p> <p>2. Interpolation bioassay</p> <p>3. Matching or bracketing bioassay</p> <p>4. Three point bioassay</p> <p>5. Four point bioassay</p>
11	MPH 204	Practical-II(BPK)	2017	<p>1. Compare and differentiate between compartmental and non compartmental analysis</p> <p>2. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms</p> <p>3. Examine the absolute and relative</p>

				<p>bioavailability of drugs form different dosage forms using either plasma or urine data.</p> <p>4. Compare the bioequivalence of two drug products</p>
12	MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2017	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2017	<ol style="list-style-type: none"> 1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 2. Learn about morals, values & work ethics. 3. Develop commitment 4. Learn about the different professional roles.

				<p>5. Ethical, social and environmental awareness</p> <p>6. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct</p>
14	MPH 207	Comprehensive Viva	2017	
15	MPH 301	Mid-Term Evaluation of Research project	2017	<p>6. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree.</p> <p>7. Projects offer the opportunity to apply and extend material learned throughout the program.</p> <p>8. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken.</p> <p>9. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups.</p> <p>10. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively</p>

				unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2017	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.

M. Pharmacy (Pharmaceutics)

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101B	ADVANCED PHARMACEUTICAL TECHNOLOGY	2017	<ol style="list-style-type: none"> 1. Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries. 2. The Active Pharmaceutical Ingredients and Generic drug Product 3. The elements of Preformulation studies, Objectives Upon completion of the course, student shall be able to understand Optimization Techniques. 4. Industrial Management and GMP Considerations, development & Stability Testing, sterilization process, Pilot Plant Scale Up Techniques & packaging of dosage forms
2	MPH 102B(Pharmaceutics)	Advanced Pharmaceutics	2017	<ol style="list-style-type: none"> 1. Upon completion of this program the

				<p>student will have fundamental knowledge in preparing conventional dosage forms, pharmaceutical calculation involved in formulation and appreciate the importance of good formulation for effectiveness.</p> <ol style="list-style-type: none"> 2. The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms using solubility studies and basic theories of dissolution. 3. To formulate and evaluate various novel drug delivery systems based on the molecular weight determination of polymers and its stability studies.
3	MPH 103	Practical-I(PHARMACEUTICS)	2017	<ol style="list-style-type: none"> 1. The passage of drugs, biopharmaceutical parameters. 2. How to do dissolution studies for the dosage forms to know the bioavailability of the drugs. 3. Solubility studies for the drugs based on its pH and its applications in the

				<p>formulations of drug delivery systems.</p> <p>4. To determine the molecular weight of the polymers.</p> <p>5. Gives an fundamental knowledge on the stability studies</p>
4	MPH 104	Practical-II(MAT)	2017	<p>5. Explains the importance of modern instrumentation in pharmaceutical analysis</p> <p>6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR.</p> <p>7. Discusses the principle and applications of chromatographic techniques</p> <p>8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage form</p>
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2017	<p>5. Explains the importance of modern instrumentation in pharmaceutical analysis</p> <p>6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR,</p>

				<p>FTIR.</p> <p>7. Discusses the principle and applications of chromatographic techniques</p> <p>8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>9. Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2017	<p>6. Awareness of ethical issues and basic ethical approaches.</p> <p>7. Improved writing skills and understanding of ethical conflict.</p> <p>8. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>9. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>10. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2017	

8.	MPH 201B (Pharmaceutics)	INDUSTRIAL PHARMACY	2017	<ol style="list-style-type: none"> 1. The elements of preformulation studies. 2. Acquire skill in preparation of different types of tablets. 3. Acquire knowledge for evaluation of various dosage forms. 4. Acquire the knowledge of processing of dosage form on large scale that suit pharma industry
9.	MPH202B(Pharmaceutics)	PROCESS VALIDATION & CGMP	2017	<ol style="list-style-type: none"> 1. Acquire knowledge on various quality assurance systems, processes and current regulatory guidelines related to manufacturing and distribution. 2. Address quality issues and provide solutions needed to attain Quality leadership in an environment of continual improvement. 3. Understand the importance of effective documentation. 4. To prepare professionally competent individuals with Quality concept being engrained to achieve global quality standards in pharmaceutical industries

10.	MPH 203	Practical-I	2017	<p>1. Gain knowledge and acquire skills to prepare different types of tablets.</p> <p>2. Highlights the handling of different equipment's for the preparation and evaluation of various dosage forms</p>
11	MPH 204	Practical-II(BPT)	2017	<p>5. Compare and differentiate between compartmental and non compartmental analysis</p> <p>6. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms</p> <p>7. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data.</p> <p>8. Compare the bioequivalence of two drug products</p>
12	MPH 205	BIO-PHARMACEUTICS & PHARMACOKINETICS	2017	<p>1. Understand the concept of ADME of drug in human body.</p> <p>2. Determine the various pharmacokinetic parameters from either plasma concentration</p>

				<p>or urinary excretion data for drug</p> <p>3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule</p>
13	MPH 206	Human Values and Professional Ethics-II	2017	<p>7. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field</p> <p>8. Learn about morals, values & work ethics.</p> <p>9. Develop commitment</p> <p>10. Learn about the different professional roles.</p> <p>11. Ethical, social and environmental awareness</p> <p>12. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct</p>
14	MPH 207	Comprehensive Viva	2017	
15	MPH 301	Mid-Term Evaluation of Research project	2017	1. Final Year Projects represent the culmination of study towards the Master

				<p>of Pharmaceutical sciences degree.</p> <ol style="list-style-type: none"> 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2017	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply

				<p>and extend material learned throughout the program.</p> <ol style="list-style-type: none">3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken.4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups.5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
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1.1.3 Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development

2018-2019

SVU COLLEGE OF ARTS

1. Adult & Continuing Education

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MAAE -1.1	Alternative Learning Systems	2018	<ol style="list-style-type: none">1. Remembrance of different forms of learning.2. Application of different technology support services for effective learning.3. Organization and administration of nonformal education programmes.4. Evaluation of nonformal education programmes.	
2	MAAE-1.2	Policy Studies In Adult/Continuing Education	2018	<ol style="list-style-type: none">1. Identify the socio-political movements during pre-independence period for the promotion of literacy.2. Analyze the trends of adult education programmes during post-independence period from social education to saakshar Bharat Mission.3. Describe the National and International organizations efforts for the promotion of literacy at various levels.4. Explain the State & Central Govt policies on adult education and special reference to literacy, post-literacy and continuing education.	
3	MAAE-1.3	Adult Psychology And Learning	2018	<ol style="list-style-type: none">1: Acquire knowledge on psychological foundations and its relevance to Adult Education and Learners.	

				<p>2: Learn classification of motives and motivation techniques to motivate the Adult Learner.</p> <p>3: Compare the Adult Personality & Child personality based on three Domain principles.</p> <p>4: Examine the Adult Learning characteristics and theories of learning, eventually he/she will apply all aspects in adult class room activity.</p>	
4	MAAE-1.4	Socio-Philosophical Foundatons Of Adult Education	2018	<ol style="list-style-type: none"> 1. Create thinking capacity to survival in the present society with philosophical approach. 2. Know great eminent leaders biography, sacrifices their lives for society. 3. Aware Dalit movement, women movement, co-operative movement in society especially rural areas. 4. Examine the problems of society with reference to bonded labor, child labour, untouchability, transgender and provide awareness on human rights. 	
5	MAAE-1.5	Communication Methods in Adult Education	2018	<ol style="list-style-type: none"> 1. Remembering the concept and methods of communication and their application to adult Education 2. Identifying different models of 	

				<p>communication.</p> <p>3. Describing the media of communication and their utility in continuing education.</p> <p>4. Realising the use of different Audio-visual aids in teaching learning process.</p>	
6	MAAE-1.6	Human Values And Professional Ethics-I	2018	<p>know the importance of professional ethics and to implement the ethical values in various professions.</p> <p>2. understand about the Good and bad values and to analyze the basic moral concepts.</p> <p>3. inculcate the students in the aspects of pursharthas .</p> <p>4. Know different crimes and its impact on personal and social life and theories of punishment</p>	
7	MAAE-2.1	Recent Trends In Adult And Continuing Education	2018	<p>.Identify the variations of literacy growth among States and Nation with reference to gender, rural and urban.</p> <p>2.Recognize the functions, activities of JSS and Saakshar Bharat Mission, to promote Life Long learning.</p> <p>3. Understand the five-year plan period programmes in terms of literacy, non-</p>	

				<p>formal and functional literacy.</p> <p>4. Examine the significance of the extension activities as third dimension of literacy programmes at field level.</p>	
8	MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2018	<ol style="list-style-type: none"> 1. Remembering the meaning, foundations and theories of curriculum development with reference to adult learners. 2. Distinguishing different principles and approaches of curriculum development. 3. Interpreting the needs and interests of lifelong learners. 4. Executing to evaluate Adult Education programmes 	
9	MAAE-2.3	Research Methods In Adult Education	2018	<ol style="list-style-type: none"> 1. Understanding the concepts and methods of research. 2. Adopting the suitable sampling methods for research studies. 3. Developing tools for research studies. 4. Ability of research report writing. 	
10	MAAE-2.4	Field Work & Practical Assignments	2018	Application of knowledge and	

				<p>skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	
11	MAAE-2.5	Management Of Adult/Continuing Education	2018	<ol style="list-style-type: none"> 1. Know the principles of Management, Planning and Organizing capacity to conduct Adult Education Programmes. 2. Develop Social and Communication Skills to organize village, Mandal, District, State and Central level programmes. 3. Acquire project techniques for sustainable programmes. 4. Learn and enhance research skills to write project report, monitoring and evaluation of data of Adult Education Programme. 	
12	MAAE-2.6	Human Values And Professional Ethics-Ii	2018	Understand and recognize the importance of Value Education & Human Values and also try	

				<p>to follow the traditional values of family, women and elders in the society.</p> <p>2: Examine code of ethics for medical and health care professionals. They Can sensitize the rural people on Health Issues & Problems.</p> <p>3: Explain the Environmental Protection and relationship between Man and Nature, causes of pollution and impact on environmental health.</p> <p>4: Recognize the need of Social ethics and fight against the anti-social activities, Organ trade, Human trafficking etc.</p>	
13	MAAE-3.1	Training In Adult And Continuing Education	2018	<ol style="list-style-type: none"> 1. Identify the importance of training in Adult and Continuing Education programmes and differences between training and education. 2. Know the training methods, training materials to organize the Adult and Continuing Education programmes. 3. Follow the teaching methods like Lecture, discussion, demonstration and Role Play methods. 4. Recognize training facilities at different levels like National, State, District and Local. 	

14	MAAE-3.2	Comparative Studies In Adult Education	2018	<p>1: Compare the Adult Education Programmes of different countries based on its aims and significance.</p> <p>2: Compare and contrast of Adult Education movement and progress in different countries like UK, USA, Denmark etc with reference to India.</p> <p>3: Find out the similarities and dissimilarities of Adult Education Programs in selected countries.</p> <p>4: Identify the problems of Adult Education in terms of Planning, Organization and Budget activities in developing countries and India.</p>	
15	MAAE-3.3	Material Development For Adult And Continuing Education	2018	<ol style="list-style-type: none"> 1. Identify the significance of learning materials in Adult Education classes. 2. Design the teaching learning activity objectives for better performance of Teacher educator in Adult Education Programmes. 3. Enhance language forms and competence and tune with the needs of the learner. 4. Develop teaching learning materials for self-learning 	
16	MAAE-3.4a	Peoples' participation And Development	2018	<ol style="list-style-type: none"> 1. Analysing the role and functions of 	

				<p>people committees,</p> <ol style="list-style-type: none"> 2. Understanding the functions of Panchayat Raj institutions. 3. Knowledge on the role of co-operatives in rural development. 4. Ability to catalyse the performance of PRIs and co-operatives. 	
17	MAAE-3.4b	Vocational Education And Skill Development	2018	<ol style="list-style-type: none"> 1. Identify the relationships of Vocational Education and Adults development. 2. Understand the institution training importance and its practices in vocational training. 3. Identify the issues of Rural Vocational training in India and Asian Countries. 4. Provide Vocational Guidance and Counselling for Adult trainees. 	
18	MAAE-3.4c	Guidance And Counselling In Adult And Continuing Education	2018	<ol style="list-style-type: none"> 1. Remembering the concept and theories and perspectives of guidance and counselling in educational process. 	

				<ol style="list-style-type: none"> 2. Recollecting understanding and analysis of educational problems of a clientele group. 3. Knowing the roles and functions of guidance counsellor. 4. Analysing the use of computers and internet in guidance and counselling. 	
19	MAAE-4.1	Monitoring And Evaluation	2018	<p>Identify the concept of monitoring and monitoring systems in adult education</p> <ol style="list-style-type: none"> 2. Describe the different evaluation models. 3. Demonstrate the tools and techniques of evaluation. 4. Understand the importance of learner evaluation. 	
20	MAAE-4.2	Human Resource Development And Management In Lifelong Learning	2018	<ol style="list-style-type: none"> 1. Understand the importance of human resource development and its historical background. 2. Analyze the human capital and its functions in Adult Education. 3. Explain the cost benefit process and problems of measurements. 4. Identify the need of planning in human resource development and 	

				relation to Adult Education.	
21	MAAE-4.3a	Environment And Education	2018	<p>1.Understand the fundamental aspects of environment and need of environmental protection.</p> <p>2: Interpret the environmental crisis with reference to pollutions and its impact of human life need of Environmental Conservation.</p> <p>3: Know the environmental laws and role of individual and community to Control environmental pollution.</p> <p>4: Explain Ecology and eco factors for Ecological Balance.</p>	
22	MAAE-4.3d	Population Education	2018	<ol style="list-style-type: none"> 1. Recollecting the concepts, needs and importance of population related terminologies. 2. Analysing the causes and consequences of population growth. 3. Distinguishing the roles of different agencies in promotion of population education and control. 4. Identifying the different National population policies and influences 	

				fertility, mortality and migration.	
23	MAAE-4.4	Dissertation / Project Work	2018	<p>Application of knowledge and skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	

2. Ancient Indian History, Cultural Archeology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	AIHC&A-304(B)	b) Social and Political Institutions in Ancient India	2018	<ul style="list-style-type: none"> ➤ The student will be able to understand the basic features of various theories and thoughts used in archaeological interpretations. ➤ They can formulate a research proposal and decide on appropriate materials and methods of analysis. ➤ They can present the findings and the process of conducting research in written and verbal formats. 	

2	AIHC&A-305(A)	a) Outlines of Indian History	2018	<ul style="list-style-type: none"> ➤ The non-history students as an external elective course become familiar in understanding the broad phases of Indian history and culture 	
3	AIHC&A-404(B)	b) India's Early Cultural Contacts with other Countries	2018	<ul style="list-style-type: none"> ➤ Cross regional cultural diffusion has been an important aspect of historical evolution. ➤ A strong and vibrating civilization having its impact felt upon other contemporary cultures has been a common phenomenon of history ➤ The students were able to understand the influence of Indian culture on Central Asia, south east asia, Japan, Tibet, Persia, Greece, Rome, Indo- China 	

3. Area Studies Programme

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1. 1	SEAP-104	Ancient Indian History Upto 1206 A.D.	2018	<ol style="list-style-type: none"> 1) Students understand the causes for the spread of Indian culture in Southeast Asia. 2) Know the different Indian dynasties of the past in Southeast Asia. 3) Students will be able to learn the impact of Indian cultural on Southeast Asian societies 	

2.	SEAPS-203	Regional Geography Of South Pacific And East Asia	2018	<ul style="list-style-type: none"> 1) Students identify physical setting, landforms, climate and soils of South Pacific. 2) Comprehend on Australia, New Zealand, Japan and China <p>Recognize the economic trends in South Pacific and East Asian nations</p>
3.	SEAPS-303	India And The World	2018	<ul style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations.
4.	SEAPS-402	Developing Blue Economy	2018	<ul style="list-style-type: none"> 1) Develop an understanding of the rise of industrial economies like Singapore, Malaysia, Thailand and Indonesia. 2) Comprehend of the economies of Australia and New Zealand. 3) Ability to know the Regional Economic Groups like ASEAN, ESCAP, APEC and EAS.

TOURISM:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1.	T-102	Planning And Development Of Tourism	2018	<ol style="list-style-type: none"> 1) Students understand geographical profile of different countries of Southeast Asia. 2) Know the trends in population movement within Southeast Asia. 3) Students will be able to assess location significance and various infrastructural developments.
2	T. 201	Historical Application Of Tourism In India	2018	<ol style="list-style-type: none"> 1) Students list the Christian Missionary activities in Southeast Asian countries. 2) Knows the factors of Indian Emigration, and Chinese economic contribution in Southeast Asia. 3) Comprehensive grasp over different cultures and religions in Southeast Asia
3	T 301	Travel Agency And Tour Operations Management	2018	<ol style="list-style-type: none"> 1) Students learn about the different political regimes in Southeast Asian nations. 2) Comprehend on the contemporary political and economic conditions in Southeast Asian countries 3) Analyse the reasons to address some of the questions of contemporary world politics
4	T 303	Airline Ticketing And Information Management	2018	<ol style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations.

4. Centre for Extension Studies
5. Centre for Gandhian Studies
6. Centre for Womens Studies

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant document
1	SVUWS 206b	Familial values and Ethics	2018	<ul style="list-style-type: none"> This course helps to define behavior in various situations, help youth make good choices, and solidify the bond of the family values. 	
2	SVUWS-304D	Women's participation in Agriculture & Allied sectors	2018	<ul style="list-style-type: none"> To understand the Role of Women in Agriculture and allied fields and Policies and Programmes for Women in Agriculture importance's in our country and to know the possible oppournities to create agri-business 	

7. Econometrics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1	EMT 101	MicroeconomicTheoryI	2018	<ul style="list-style-type: none">• The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments.• The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face.• Microeconomics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms.• Microeconomics shows conditions under which free markets lead to desirable allocations.• The fundamental concepts of supply and demand, rational choice, efficiency, opportunity costs, incentives, production, profits, competition, monopoly, externalities, and public goods will help you to understand the world around you.	
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2	EMT 102	Macroeconomic Theory I	2018	<ul style="list-style-type: none"> • Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income, analyse the various income identities with government and international trade, define the concept of green accounting. • Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination. • Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyse the theories of absolute and relative income hypotheses. • Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI. CO5. Illustrate the meaning of interest, analyse the various theories of interest • The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more. The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance. 	
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3	EMT 103	MathematicalMethods	2018	<ul style="list-style-type: none"> • Formulate mathematical models describing the dynamics of economic systems. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations. • Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm. • Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and cost. • Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations. • Students will get to learn applications of mathematical tools to economy. 	
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4	EMT 104	Practical I	2018	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 Able to find Inverse of a Matrix, System of Simultaneous Linear Equations and Cramer's Rule method.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
5	EMT 105	StatisticalMethods	2018	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis.</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 formulate Statistical Methods describing the dynamics of economic systems such as production function analysis and solve econometric analysis of underlying data use with knowledge advanced econometric tools and techniques can solve easily.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
6	EMT 106	HumanValuesandProfessiona IEthics-I	2018	
7	EMT 201	MicroeconomicTheoryII	2018	<p>Course Objectives: The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. The factor prices</p>

8	EMT 202	Macroeconomic Theory II	2018	<p>CO1 The overarching goals of macroeconomics are to maximize the standard of living and achieve stable economic growth</p> <p>CO2 The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more.</p> <p>CO3 The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance.</p> <p>CO4 Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off.</p> <p>CO5 Objectives of Macroeconomic policies – Objectives of Monetary policy. New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.</p>	
9	EMT 203	Basic Econometrics	2018	<p>CO1 Adequate competency in the frontier areas of economic theory and methods.</p> <p>CO2 Formulation and estimation of a multiple regression model.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all models</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	

10	EMT 204	Practical II	2018	<p>CO1 Students can Identify Inter industrial relationships using Input-output analysis,</p> <p>CO2 analyse maximization of profits and minimization of costs can evaluate using Linear Programming,</p> <p>CO3 Analyse relationship of economic variables using simple and multiple regression models which are covered in basic Econometrics</p> <p>CO4 Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance</p> <p>CO5 They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.</p>	
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11	EMT 205	Mathematical Economics	2018	<p>CO1 Students can deal Mathematical calculation of static optimization, Application of Lagrange's method and also student can evaluate Differential Equations and with Economic Applications.</p> <p>CO2 Able to estimate and interpret Inter industrial relationships using Input-output analysis, also analyse maximization of profits and minimization of costs of the firms using Linear Programming method</p> <p>CO3 Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.</p> <p>CO4 Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market model with Stocks</p> <p>CO5 Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.</p>	
12	EMT 206	Human Values and Professional Ethics II	2018		

13	EMT 301	<i>Indian Economy</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources. Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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14	EMT 302	<i>Economics of Insurance</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicum in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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15	EMT 303	<i>Advanced Econometrics</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Concepts of Heteroscedasticity & Multicollinearity. Possible reasons behind the presence of Heteroscedasticity & Multicollinearity. Skill to judge the reliability of estimation in case of violation of basic assumptions for the application of ordinary linear regression method.</p> <p>CO2 Concepts of Autocorrelation reasons behind the presence of Heteroscedasticity & Multicollinearity. Describe the variance/covariance matrix for the regression errors under the assumption that the errors are correlated</p> <p>CO3 Apply modern econometric methods covering time series analysis, financial econometrics, microeconometrics, macroeconometrics and structural econometric modelling;</p> <p>CO4 Interpret and critically evaluate applied economics research literature; demonstrate programming skills and numerical methods; and</p> <p>CO5 Apply methods learned to address policy and business decision questions.</p>	
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16	EMT 304	<i>Computer Applications and Data Analysis</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will get basic knowledge of computers i.e., block diagram, evolution of computer, input/output devices, storing information in computer etc.</p> <p>CO2 At the end of this course student will gain Examine spreadsheet concepts and explore the Microsoft Office Excel environment. Import and export data.</p> <p>CO3 Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas. Perform analysis tasks using Data analysis pack</p> <p>CO4 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyses and conclude using SPSS Package</p> <p>CO5 Finally, student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	
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17	EMT 305	Public Finance	2018	<p>.</p> <p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Understand the sources of finance both public and private, demonstrate the role of government to correct market failures and possible advantage of public financing</p> <p>CO2 Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.</p> <p>CO3 Understand the possible burden, benefits and distribution of various types of taxes among various classes of people, know the general trend and impact on general welfare and arouse them to suggest good and bad tax system.</p> <p>CO4 Understand the needs of public borrowing from all possible sources to meet necessary public investment/expenditures. Also be alerted to find sources for repayment</p> <p>CO5 Deliver effectively the preparation of budget and how they are passed in the house. Understand the changes in size and flexibility of state and central budget along with the role played by Finance Commission.</p>	
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18	EMT 306	<i>Financial Institutions and Markets</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2 Effectively narrate the kinds and components of money with its regulatory system, be aware of the functions, objectives and limitations of commercial banks.</p> <p>CO3 Identify the existence and development of non-banking financial institutions, know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.</p> <p>CO4 Understand the conditions of financial markets and its impact in the economy</p> <p>CO5 Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p>	
19	EMT 307	<i>Practical III</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will gain Examine spreadsheet. Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas.</p> <p>CO2 Perform analysis tasks using Data analysis pack using MS-Excel.</p> <p>CO3 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyse and conclude using SPSS Package</p> <p>CO4 Student will able to test of Multicollinearity, Heteroscedasticity and Autocorrelation.</p> <p>CO5 Student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	

20	EMT 308	IntroductiontoEconometrics	2018	<p>CO1 students will have adequate competency in the frontier areas of economic theory and methods</p> <p>CO2 Use basic econometric estimation techniques such as Ordinary Least Squares to estimate bivariate and multivariate regression models.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all model.</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Students will acquire additional specialization topics are estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	
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21	EMT 309	IndianEconomy	2018	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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22	EMT 310	EconomicsofInsurance	2018	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicums in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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23	EMT 401	<i>International Trade and Finance</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Identify the basic difference between inter-regional and international trade, understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>CO2 Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>CO3 Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.</p> <p>CO4 Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.</p> <p>CO5 Be aware of the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.</p>	
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24	EMT 402	<i>Environmental Economics</i>	2018	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Realize the importance and influence of environment on the economy including the quality of manpower. Arouse their feelings to make cleaner environment so as to achieve harmonious development.</p> <p>CO2 Understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries.</p> <p>CO3 Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean.</p> <p>CO4 Understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of resources, careless or unscientific dump/management of wastes.</p> <p>CO5 Suggest appropriate measures to correct environmental degradation, aware of those ingredients such as healthy climate, quality of human beings, domestic and other natural habitats and biodiversity levels, productivity and productions, sustainability, etc are all influenced by environment.</p>
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8. Economics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ECO-101 & 201	Micro Economics Analysis – I & II	2018	<ol style="list-style-type: none"> 1. Graduate Consulting Analyst. Graduate Recruitment Bureau. 2. Economic Consultant (Public Policy). 3. NERA Internship -Industry Research Analyst. Research

				Fellow. 4. Graduate Economic Consulting Internship, Economist, Customer Experience Strategy.
2	ECO-102 & 202	Macro Economics Analysis – I & II	2018	1. Work for a central bank of financial institutions. 2. Work as a consultants. 3. work in banking sector.
3	ECO-103&203	Public economics &Federal Finance	2018	1. Assistant commercial Tax Officers. 2. Industrial finance officers. 3. Bill collectors.
4	ECO-104&204	Mathematical Methods in Economics – I and Statistical Methods in Economics	2018	1. Assistant Statistical officers. 2. Bossiness firm consultant. 3. Market research Analyst. 4. Financial analyst. 5. Investment manager. 6. International trade specialist.
5	ECO 105(a)	Fundamentals of Computer	2018	1. Digital Assistants. 2. Office Computer operators.
6.	ECO 105(b)	Urban Economics	2018	1. Senior urban economist. 2. International urban Economist. 3. Senior program Research analyst. 4. Urban environmental impact officer.
7.	ECO 105(c)	Welfare Economics	2018	1. Policy maker. 2. Administrator. 3. Welfare officer in Sachivalyam. 4. Admin in Sachivalayam.
8.	ECO 106(a)	Economics of Environment	2018	1. Environmental pollution officer. 2. Environmental consultants. 3. Environmental pollution planning and consultants. 4. Environmental conservation / Advocacy.
9.	ECO 106(b)	Demography	2018	1. National Sample Survey officers. 2. Census Survey Officers. 3. Chief planning officers.
10.	ECO 107	Human Values and Professional	2018	1. The student will be enriched with several aspects

		Ethics -I		<p>pertaining to Human values and performing of Professional Ethics in day today life.</p> <ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
11	ECO 205(a)	International Trade: Theory and Policy	2018	<ol style="list-style-type: none"> 1. International trading officers. 2. Export and import Officers. 3. Shares consultants. 4. Commercial desk manager. 5. Global trade Advisory.
12	ECO 207	Human Values and Professional Ethics -II	2018	<ol style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	ECO 301	Economics of Growth and Development	2018	<ol style="list-style-type: none"> 1. Project Coordinator. 2. Recreation manager. 3. Programme Director. 4. Social and community manager.
18	ECO 302	Indian Economy	2018	<ol style="list-style-type: none"> 1. NSSO. 2. Economic Survey directors.
19	ECO 304 (a)	International Finance	2018	<ol style="list-style-type: none"> 1. Financial Advisors. 2. Financial officers.
23	ECO 304	Communication and Soft Skills	2018	<ol style="list-style-type: none"> 1. Skill development coordinators. 2. Public relation officers. 3. Marketing and Advertising. 4. Media.

				5. Meeting and event planning.
26	ECO 401	Rural Development	2018	1. MGNREGA Programme officers. 2. District Coordinators. 3. Institutional building officers.
27	ECO 402	Financial Institutions and Markets	2018	1. Corporate finance. 2. Financial planning officers.
28	ECO 403 (a)	India's Economic Reforms	2018	1. Planning & Development Officers
29	ECO 404 (c)	Entrepreneurship and Skill Development	2018	1. Business consultant. 2. Research and development. 3. Recruiter. 4. Sales managers.
30	ECO 404 (d)	Labour Economics	2018	1. Labour officers. 2. Labour relations officers. 3. Labour relations assistant. 4. Construction estimators
31	ECO 305 (c)	Economics of Insurance	2018	1. Insurance Agents. 2. Loan processor. 3. Loss control officers. 4. Risk managers.
33	ECO 405 (a)	Human Resource Development	2018	1. Human resource recruiter. 2. Performance management and development. 3. Employees training officers. 4. Organizational development officers.

9. Education

10. English

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1)	101:	Poetry-I	2018	<ul style="list-style-type: none"> • An understanding of the evolution of English poetry across ages. • May inspire poetic creativity 	
2)	102:	Drama-I	2018	<ol style="list-style-type: none"> 1. Perceive the nuances of performance 2. Recognize the transformation of human experiences into dramatic experiences. 	
3)		:Fiction-I	2018	<ol style="list-style-type: none"> 1. Aesthetic and literary merits of the novel 2. The conditions of the age and the influence 	
4)	104	:Prose-I	2018	<ol style="list-style-type: none"> 1. Understand the genre of essay 2. Imbibe the deeper human values implied in the essay. 	
5)	106:	Human Values and Professional Ethics-I	2018	<ol style="list-style-type: none"> 1. Realize the necessity of practicing Human values and Ethics in all walks of life including the profession they opt for 2. Understand Bhagvad Gita as a guide for modern lifestyle 	

6)	201	:Poetry-II	2018	<p>Sensitizes the students on the classical and contemporary poetic ethos</p> <p>Raises student awareness on movements like Modernism, War Poetry, Women's poetry, Symbolism etc,</p>	
7)	202	:Drama-II	2018		
8)	203	:Fiction-II	2018	<ol style="list-style-type: none"> 1. The great works of major novelist of modern age 2. The ability to understand the technique of the Novel 	
9)	204	:Prose-II	2018	<p>After the completion of the course the students are able to</p> <ol style="list-style-type: none"> 1. Know the working mechanism of Feminism and socialism 2. Know the mind and strategies of Victorian essayists 3. Know the importance of culture in the lives of Victorian people <p>Know the importance of being human in their dealings with the fellow beings</p>	
10)	205:	English Language Teaching	2018	<ol style="list-style-type: none"> 1. Understand the importance of language lab, teaching materials and audio-visual aids in the learning and teaching of English. 2. Know to test and testing components of language tests and examinations and evaluation procedures 	

11)	301	: Indian English Literature-I	2018	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the merits of Indian English writings and drawbacks if any 	
12)	302:	American Literature-I	2018	<ol style="list-style-type: none"> 1. An idea of English literature in America 2. Familiarity with the literary movements 3. Knowledge about concepts like Puritanism, transcendentalism, symbolism, impressionism etc 	
13)	303:	Literary Criticism-I	2018	<p>Equips the student with the evolution of English Literary Criticism from Aristotle to early twentieth century</p> <p>Helps students map the genealogy of Western canonical critical texts</p>	
14)	304 (A) 304(B): 304 (C): 305 (D):	:Comparative Literature Short Story Women's Writings Indian Literature in English	2018	<ol style="list-style-type: none"> 1. Understand national and world literatures and the need of comparative studies in the global world. 2. Understand the ways of comparative analysis <p>OUT COMES:</p> <p>Perceives creativity as a tool of empowerment and unity amongst women.</p> <p>Understand gendered spaces in creativity and the genealogy of women's writings like Indian, African American, French etc.</p>	

15)	305 (A):	Communicative English	2018	<p>Understand the significance and importance of Communication in English in the present day world</p> <ol style="list-style-type: none"> 1. Understand communication process, the different types and barriers of communication 	
16)	305(B):	English for Media	2018	<ol style="list-style-type: none"> 1. Understand the use of language in different situations in writing for the media 2. Learn the oral skills necessary for media like interview skills 	
17)	05(C):	3An Introductory Course to Literature	2018	<ol style="list-style-type: none"> 3. Understand the use of language in different situations in writing for the media 4. Learn the oral skills necessary for media like interview skills 	
18)	401:	Indian English Literature-II	2018	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the poetic features of Indian English poetry 	

19)	404(A): 404(B): 404(C): 404(D):	Translation: Theory and Practice Subaltern Studies Post-Colonial Literatures World Classics in English Translations	2018	1. Know the concepts of dalitism, feminism, marginalism and Subaltern aspects with relevant theories 2. Appreciate and understand the struggles and sorrows of subalterns	
20)	405(A): 405(B): 405(C):	Soft Skills Indian Literature in English Translation Contemporary Translation Studies	2018	1. Will learn about morals and responsibilities 2. Learn to acquire the enduring values embedded in the great literary works of our writers	

11. Linguistics

S.No	Course Code	Name of the course	Year of introduction	Activities/content with direct bearing on employability/entrepreneurship/skill development	link to the relevant document
1	101	History of Linguistics	2018	i.Learnt about the early linguistic studies, prescriptive Vs traditional grammar. ii. The students will able understand major linguistic tools of modern times. iii. Understanding linguistic contributors in the history of linguistics.	Proof enclosed
2	304E	Language and	2018	i. The student knows aim, theory and types of	

		communication		communication ii. Identify levels and features of communication. III. The student will be able to understand information and language and environment.	
3	305 C	Language Technology	2018	i. Gained knowledge on language technology and characteristics of speech. ii. The students are able to analyze writing, printing and digital language technologies. iii. The student knows studies on language technology.	
4	404E	Applied Linguistics	2018	i. The students will enrich the knowledge in theoretical and applied linguistic areas. ii. Skill development in lexicography and translation. iii. The students know language teaching and language learning.	

12. Hindi

13. History

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	HST 101	History of India Up to 650 A D	2018	<ul style="list-style-type: none"> ➤ Students will have a familiarity with the sources, different political, social, economic, cultural and religious traditions of the Indian subcontinent upto 650 C.E. ➤ Student will also be well versed with different analytical approaches and models of interpretation
2	HST 102	History of Indian Polity and Economy, 1206-1757	2018	<ul style="list-style-type: none"> ➤ Students can familiarize in understanding the continuity with changes in all spheres of history, polity and economy under the Delhi sultanates. ➤ Students can understand thoroughly the Mughal conquest of India, their rule, polity and

				legacy.vv
3	HST 103	History of Modern India, 1757 – 1947	2018	<ul style="list-style-type: none"> ➤ Student can gain knowledge on the English East India company rule and their reforms.
4	HST 104	History of Modern World, 1900-1945	2018	<ul style="list-style-type: none"> ➤ Student can gain the knowledge on the history and consequences of the World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism. ➤ Students will understand International Relations during 1919-39. ➤ Students can understand thoroughly about the Second World War and its impact.
5	HST 105 (A)	History of Andhrasupto 1336 A D	2018	<ul style="list-style-type: none"> ➤ The study of comprehensive history of the country is incomplete without the study of regional history. ➤ Regional history is becoming more and more popular, for it has inherit potential of taping varied kinds of sources for understanding the divergent aspects of local heritage and culture. ➤ The students can develop thorough understanding on Ancient Andhra history and culture.
6.	HST 105 (B)	History of World Civilizations	2018	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
	HST 106 (A)	Theoretical Concepts of Tourism	2018	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
7.	HST 106 (B)	History of Medieval World	2018	<ul style="list-style-type: none"> ➤ Student can gain thorough knowledge on the world in medieval ages and rise of Christianity

				<ul style="list-style-type: none"> ➤ Will understand Transition to Modern Age ➤ Possess knowledge on French Revolution and its Impact
8.	HST 107	Human Values and Professional Ethics-I.	2018	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large
9.	HST 201	History of India 650-1206 A D	2018	<ul style="list-style-type: none"> ➤ Students can develop comprehensive knowledge on political, social, economic, religious and cultural history of early medieval India , regional polities and its impact ➤ Can also able to understand the circumstances lead to the invasions of Arabs and foundation of Muslim rule in India
10	HST 202	Social and Cultural History of India, 1206-1757	2018	<ul style="list-style-type: none"> ➤ Students can gain comprehensive knowledge on the freedom movement from its inception upto independence in India ➤ The students can also able to understand the role of national congress and prominent leaders of national movement, problems and perspective in the progress of freedom movement
11	HST 203	Freedom Movement in India, 1857 –1947	2018	<ul style="list-style-type: none"> ➤ The students can understand the Cold War and its Impact ➤ Possess knowledge on UN and the Concept of World Peace ➤ Gain the knowledge on the Disintegration of Socialist Block
12	HST 204	History of Contemporary World, 1945-2000	2018	<ul style="list-style-type: none"> ➤ This course provides comprehensive knowledge on the last imperial political formation in South India and the history of Vijayanagara, Bahmani and contemporary pretty powers.

				<ul style="list-style-type: none"> ➤ It helps to understand with the context of polity, economy, culture, religious and ideological changes
13	HST 205	A) History of Vijayanagara Empire B) History of Modern Africa	2018	<ul style="list-style-type: none"> ➤ Students will be familiar with Road to Independence in Africa ➤ They will understand development and underdevelopment in Africa
14	HST 206	A) Historical Application of Tourism in India B) Women Studies in Modern India	2018	<ul style="list-style-type: none"> ➤ The students can familiarize the knowledge needed to excel in tourism activities. ➤ It will equip the students with the solid foundation to build upon the fundamentals, useful skills and expertise that can assist employment in Tourism Industry.
15	HST 207	Human Values and Professional Ethics-II	2018	<ul style="list-style-type: none"> ➤ The student can understand thoroughly the importance of Women Studies ➤ Will understand the role of Women in Hinduism and Islam ➤ Also gain knowledge about the Women participation in various movements in India

14. Human Rights and Social Development

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1.	HR 101	Human Rights: Concepts and Theoretical Perspectives	2017	<ol style="list-style-type: none"> 1. To Expose the students about nature and concept of Human Rights. 2. To apprise the students about the Liberal. Marxian prerspectives. 3. To expose the students that alternative, third world and Indian Perspectives of Human Rights,
2.	HR 102	Human Rights in India the constitutional and Legal Framework	2017	<ol style="list-style-type: none"> 1. Students to know the Indian Constitution and Human Rights. 2. To understand the Judiciary and Human Rights. 3. To understand about Criminal Justice system in India.
3.	HR 103	Human Rights and Duties Education	2017	<ol style="list-style-type: none"> 1. To expose students about the importance of Human Rights and Duties education. 2. To apprise the students about the target groups for Human Rights <p>To expose the students about the content of Human Rights Education.</p>

4.	HR 104	Rights and the implementation Machinery	2017	<ol style="list-style-type: none"> 1. To expose the students about the implementation machineries at National Level and International Level. 2. The students understand about how the problems in Accessing Justice through Courts and Tribunals. 3. To expose the students that statutory bodies of Human Rights.
5.	HR 105 A	Working Class and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. <i>To understand the students about the status of working class, concept and issues.</i> 2. <i>To expose the student about the basic rights and duties of various sections.</i> 3. <i>To understand the Indian Constitutional Framework.</i>
6.	HR 105 B	Human Rights Education, Teaching and Training	2017	<ol style="list-style-type: none"> 1. To expose the student about the origin, UNO and Human Rights education policies. 2. To apprise the students about the principles and practice in teaching of Human Rights Education. 3. To understand the student about training aspects of Human Rights.
7.	HR 106 A	Human Rights Activism and Role of NGOs	2017	<ol style="list-style-type: none"> 1. To expose the students about the different types of Human Rights Activisms. 2. To identify the student that the different Types of NGO's and their role for promoting the Human Rights.

8.	HR 106 B	Social Movements and Human Rights in India	2017	<ol style="list-style-type: none"> 1. To expose the students about the role of NGOs for protecting human rights. 2. To Understand the student about the Political Movements, Ecological and Environmental Movements of Human Rights. 3. To apprise the student about the various types of Social and Political Reforms of Human Rights.
9.	HR 107	Human Values and Professional Ethics - I	2017	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i> 3. <i>To assess the student about various Crime and Theories of punishments</i>
10.	HR 201	Human Rights and Indian Polity	2017	<ol style="list-style-type: none"> 1. To expose the students about the concept of basic structure of Indian Polity, administrative structure in India. 2. To apprise the student about the role of People's Agencies for protecting and promotion of human rights in India. 3. To understand the students about the Legislative Procedure and implementation process in India.
11.	HR 202	Emerging Dimensions of Human Rights	2017	<ol style="list-style-type: none"> 1. To expose the students about the Human Rights and Duties of Non-State Armed

				<p>Groups and Commercial Corporations.</p> <ol style="list-style-type: none"> 2. To understand the students about the rights of future generation. 3. To apprise the students about the Human Rights and Changing Dimension of State Sovereignty and Humanitarian' Intervention.
12.	HR 203	Human Rights: The International Context	2017	<ol style="list-style-type: none"> 1. To understand the students about the evolution of human rights and UN charter of human rights. 2. To expose the students about regional dimensions of human rights and special conventions on human rights. 3. To understand the students about International conventions on human rights and duties.
13.	HR 204	Research Methodology, Statics and Computer Applications	2017	<ol style="list-style-type: none"> 1) Student to Know Scope of Social Research. 2) To Understand Data Analysis. 3) Understand About Types of Data Collections
14.	HR 205 A	Human Rights – The Socio Economic Context	2017	<ol style="list-style-type: none"> 1. To expose the students about the socio, economic background of human rights. 2. To apprise the students about human rights of vulnerable groups. 3. To understand the students about the basic

				human need for development with respect to human rights.
15.	HR 205 B	Societal Problems of Human Rights in India	2017	<ol style="list-style-type: none"> 1. To understand the student about the societal problems of human rights. 2. To understand the students about the social problems of minorities, scheduled caste and scheduled tribes. 3. To expose the students about Regionalism, terrorism.
16.	HR 206 A	Human Rights and Criminal Justice System	2017	<ol style="list-style-type: none"> 1. To expose the students about Rights of Inmates of Prisons and Custodial Homes. 2. To understand the students about the Right to Legal Aid, Access to Justice and Speedy Justice. 3. To expose the students that the problems of human rights.
17.	HR 207	Human Values and Professional Ethics - II	2017	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i> 3. <i>To assess the student about various Crime and Theories of punishments.</i>
18.	HR 301	Social Movements and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the student about conceptual perspectives of social movements and

				<p>human rights.</p> <ol style="list-style-type: none"> 2. To apprise the students about the social, political and religious reforms movements and human rights. 3. To expose the students that the role of International and National Institutions in promoting Human Rights.
19.	HR 302	Science, Technology, Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. Understand the basic concept in science and technology and also about Indian perspective on science and technology. 2. Ability to know about the Right to Adequate Food, Agricultural, Biotechnology Impact of on Agriculture, Food Biotechnology and Revolution in Information Technology. 3. Analyse know rights to health and application of Biotechnology in Medicine and also about Intellectual Property Rights. 4. Assess the use of natural resource Environmental Biotechnology and Use Technologies
20.	HR 303 A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2017	

				<ol style="list-style-type: none"> 1. To understand the students that the issues for peoples movements and public advocacy on human rights and duties 2. To understand the students on extension work with respect to human rights. 3. To understand the students about the uses of NGOs fact finding and uses of information media.
21.	HR 303 B	Socially/Economically Disadvantaged people and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To expose the students about the concept of the Constitutional Safeguards and Special Protection Laws and Policies. 2. To understand the students about the concept of the disadvantaged people in the Indian Society. 3. To understand the students about the Institutional Mechanisms for protecting the human rights of the disadvantaged groups.
22.	HR 303 C	Human Duties and Responsibilities	2017	<ol style="list-style-type: none"> 1. To understand the student about the concept of human duties and responsibilities. 2. To expose the student about human values and values of humanism. 3. To apprise the students about evaluation of

				human duties.
23.	HR 303 D	Children and Human Rights and Duties	2017	<ol style="list-style-type: none"> 1. To understand the student about the concepts of Child Labour and protecting norms at National and International level. 2. To apprise the student that the status of children in Indian society with respect to human rights. 3. To understand the students about the National and International mechanisms for protecting the child rights.
24.	HR 304	Soft Skills	2017	<ol style="list-style-type: none"> 1. To understand the student that the concepts of soft skills with respect to human rights. 2. To understand the student in employability skills in human rights aspects. 3. To expose the students that the professional skills for team building and problem solving.
25.	HR 305 A	Historical and Philosophical Perspectives of Human Rights	2017	<ol style="list-style-type: none"> 1. To expose the student that the a basic understanding to the concepts of human rights, human values, dignity, justice and equality. 2. To understand the students that the theories of human rights in various inter disciplinary dimensions. 3. To apprise the student that the concept of Magna Carta-Bill of Right-French and American- Declaration and Uncharted on

				human rights.
26.	HR 305 B	Human Rights and Duties in India	2017	<ol style="list-style-type: none"> 1. To understand the students about the concepts of Constitutional Human Rights and Responsibilities. 2. To apprise the students that Extra-ordinary situations and human rights in India. 3. To understand the violations of rights in present Civil Society in India.
27.	HR 401	Human Rights in Andhra Pradesh	2017	<ol style="list-style-type: none"> 1. To expose the students about various Human Rights Movements at National and State Andhra Pradesh) Level. 2. To understand the concept of social stratification and problems of Caste and Un-touchability. 3. To expose the students that the gender inequality and various gender violation in Andhra Pradesh.
28.	HR 402	Development, Trade and Human Rights	2017	<ol style="list-style-type: none"> 1. To understand the student about the concept of human rights of various vulnerable groups ath National and International level. 2. To apprise the student about the Trade related human rights violations and Trade development. 3. To understand the student about the role of human rights in development.
29.	HR 403 A	International, Humanitarian and Refugee Laws	2017	<ol style="list-style-type: none"> 1. To expose the students about the concepts of International Humanitarian Law and Implementation enforcements of IHL. 2. To apprise the student about the concept of

				<p>International Refugee Law and protection under International Law.</p> <p>3. To understand the students about solution to Refugee Problem.</p>
30.	HR 403 B	Environment and Human Rights and Duties	2017	<p>1. To expose the student about the concept of Environment and rights to clean environment.</p> <p>2. To apprise the students about the International regimes for protection.</p> <p>3. To understand the students about the role of various agencies for protecting environment with respect to human rights.</p>
31.	HR 403 C	Human Rights and Criminal Justice System	2017	<p>1. To expose the student about the concept of the International Human Rights systems.</p> <p>2. To understand the student about the International Organisations for protecting the Human Rights.</p> <p>3. To understand the students about the UN Organs and Human Rights.</p>
32.	HR 403 D	Minorities and Human Rights and Duties	2017	<p>1. To student understand that the concept of evolutionary perspectives and Institutional mechanisms for protection of Minorities.</p> <p>2. To expose the student that rights and duties of</p>

				Minorities under in the Indian System. 3. To apprise the student that the Minorities and human rights challenges.
33.	HR 405 A	Development, Globalization and Human Rights	2017	<ol style="list-style-type: none"> 1. Understand to role of Human Rights in Development and various theories of development. 2. Analyses the new international Economic Order (NIEO),WTO GATT and International Trade and Human Rights Perspective in India. 3. Evaluvate the Globalisation and its impact on agriculture, environment, labour, women, culture and health. 4. Know about the Transnational Corporations (TNCs) and Human Rights violations and Impact of GATT-WTO on sovereignty.
34.	HR 405 B	Women and Human Rights and Duties	2018	

				<ol style="list-style-type: none"> 1. To expose the students about the concept or the status of women in various sectors with respective human rights. 2. To expose students about the National and International norms for protection at International and National level. 3. To apprise the students about the Institutional mechanisms for Protection of rights of women.
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Human Rights and Duties

S.No	Programme Name	Programme Code	Course Name	Course Code	Year of Introduction	Description of the course addressing Professional Ethics
1	Human Rights and Duties	161	Human Values and Professional Ethics-I.	HR -106	2018	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large.
2	HR -205	161	Human Values and	HR -205	2018	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and

			Professional Ethics-II			<p>professional ethics which are essential for positive human behavior and actions in our daily lives.</p> <p>➤ They inspire the fundamental goodness of human beings and society at large.</p>
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15. Law

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CO -101	Mass Media Law	2018	<ul style="list-style-type: none"> a. Have a detailed and sophisticated understanding of the general principles governing freedom of speech, the public interest and the media; b. Have a detailed, technical and specialised understanding of the constraints imposed on the media in the reporting of court proceedings; c. Have developed the ability to independently understand, research and critically analyse legal and scholarly developments that contribute to professional practice in the area of media law; and d. Have a detailed, technical and specialised understanding of defamation law in India and comparatively; e. Have developed expert knowledge of the practical operation of defamation law in India and comparatively;
2	CO-102	Public Utilities Law	2018	<ul style="list-style-type: none"> a. government policy in regard to such utilities in general and to each utility in particular,

				<ul style="list-style-type: none"> b. The growth and evolution of the public utilities; c. patters of the laws of incorporation and d. powers, functions and liabilities of the public utilities vis-a-vis their employees, consumers and others.
3	CO- 103	Law and Social Transformation in India	2018 2018	<ul style="list-style-type: none"> a. Critically analyse the Law as an instrument of social change and product of tradition and culture b. Explore the nature and function of Law as an institution and process interlinked with the social and economical philosophy of education. c. Examine development of law from historical processes and how for the a touch of modernization and value can be added to legal system d. To analyse the different approaches of Law and Justice
4	CO - 104	Indian Constitutional Law: The New Challenges	2018	<ul style="list-style-type: none"> a. Understand and interpret Constitution to address the emerging complex issues; b. Explore the various functional theories, doctrine and Constitutional principles working in the backdrop and its interplay with the emerging issues; and c. Examine the boundaries, limitations, of Constitution from different perspectives and explore the possible approaches of interpretation and understanding from the perspective of Law and Justice.
5	CO - 201	Union – State Finance Relations	2018	<ul style="list-style-type: none"> a. To understand India as development of complex federal structure (Quasi) federal and its strength and weaknesses; b. Explore the various functional theories, doctrine and Constitutional principles of federalism and its interplay under Indian Constitution; and c. To examine the area of conflicting interest between

				Union and State and primacy of Union over the State.
6	CO - 202	Constitutionalism, Pluralism and Federalism	2018	<ul style="list-style-type: none"> a. To explore the basic principles of Constitutionalism, different model of federalism and its interplay in the Indian legal system; b. To examine the adoption of, utility and justification of Constitutional model in India; and c. To analyse India as pluralist society and suitability of various model, approaches in India in functional aspects of comparison with other legal system.
7	CO – 203	Judicial Process	2018	<ul style="list-style-type: none"> a. Intended to highlight the role of court as policy maker, participant in the power process and as an instrument of social change. b. expose the intricacies of judicial creativity and the judicial tools and techniques employed in the process. c. Since the ultimate aim of any legal process or system is pursuit of justice, a systematic study of the concept of justice and its various theoretical foundations is required. d. Intends to familiarise the students with various theories, different aspects and alternative ways, of attaining justice.
8	CO – 204	Legal Education and Research Methodology	2018	<ul style="list-style-type: none"> a. Critically analyse the various research skill, especially in the field of law; b. To develop the skill of application of teaching methods in legal education c. To understand and analyse the various strength and weakness of teaching learning and research process for the field of law; and d. To develop the skill of utilising computer technology for Legal education and Legal research.

9	CO – 301	Human Rights	2018	<ul style="list-style-type: none"> a. Acknowledge the social and economic rights of workers, forced labour, child labour, bonded labour, slavery, trade union, social security, right to health, standard of living, protection of families etc. b. To gain and acquire the knowledge about cultural rights of indigenous population. c. Understand the third-generation solidarity right of various populations. d. Acknowledge the ideas and knowledge about Human right Protection system of United Nations in the light of Covenant of Civil and Political rights.
10	CO – 302	National Security, Public Order and Rule of Law	2018	<ul style="list-style-type: none"> a. Understand and interpret various provision and safeguards to protection national security; b. To explore the various approach of public order, importance of rule of law and different legislations; c. Balancing the civil liberties and power of state; and d. Explore the various functional institution like election commission, parliament and check and balance on the national importance.
11	CO- 303	Practical Training	2018	<ul style="list-style-type: none"> a. Critically apply the understanding and application of legal research principles to legal research writing; b. To explore the various stages and its application for the practical record work; c. To have the development of idea, and its application; d. To have the ability to provide the original and non-plagiarised work to the existing field of knowledge e. Legal aid Camps and Legal Literacy Programmes, Court Observation work. f. On the completion of the course students will develop an inclination towards research and

				academics.
12	CO- 304a	Environment Protection and The Law	2018	a. Study the relationship between environment and climate change as well as the role of law, judiciary, resolution mechanisms but the alternate energy solutions and how people are dealing with climate changes, environmental laws and implementation of available solutions.
13	CO- 304b	Intellectual Property Rights Law	2018	a. To give philosophical underpinnings of traditional notion of property and IP • b. To examine the link between Industrial development & IP protection • To examine the conceptual development of IP concepts through judicial approach • c. To examine the impact of IP on economy, health and daily activities • d. To understand the basic principles enunciated in international agreements relating to IP
14	CO- 401	Dissertation and Viva-Voce	2018	a. Identify key research questions within the field of Demography on which you will carry out independent research. b. Manage your time effectively whilst working on your independent research. c. Demonstrate appropriate referencing and develop skills in other aspects of academic writing. d. Demonstrate knowledge and understanding of report writing. e. Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research
15	CO – 402a	Law of Consumer	2018	a. Define provision under the Consumer Protection

		Protection		<p>and Right to Information Act and apply them to situations accordingly</p> <p>b. Draft a consumer complaint with ease</p> <p>c. Confidently approach a Consumer Forum and get aware of the redressal mechanism</p> <p>d. To expose the students about Consumer Protection Laws;</p> <p>e. To develop the conceptual understanding of Consumer Protection regime.</p>
16	CO- 404 b	International Human Rights (MOOC / ONLINE COURSE)	2018	<p>a. Analyze and comment on key controversies surrounding the development of international human rights law</p> <p>b. Use conceptual tools to follow the developments of human rights law</p> <p>c. Be most effective in contributing to the enforcement of international human rights law</p>

16. Library and Information Science

No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	LIS-101	Foundation of Library and Information Science	2018	1. Know the various types of libraries and their role in the society 2. Learn the Professional ethics and library Legislation in India 3. Understand LIS education in India and various library associations in India
2	LIS102	Knowledge Organization: Classification	2018	1.. Understand the definition, need and purpose

		Theory		<p>of classification</p> <p>2. Learn the Fundamental Categories, Facet Analysis, types of Isolates in all schemes of classification</p> <p>3. Understand the Notation, trends and developments in Classification</p>
3	LIS-103P	Knowledge Organization: Classification Practice	2018	<p>1.Learn the Dewey Decimal Classification Scheme</p> <p>2. Get the skill regarding assigning the class numbers</p> <p>3.Have knowledge on Tables and Schedules of DDC</p>
4	LIS-104	Knowledge Management	2018	<p>1.Get an idea on the concepts of knowledge management, types of knowledge</p> <p>2.Understand the knowledge creation models, knowledge transfer in E-World</p> <p>3.know the tools for knowledge management and neural network and datamining</p>
5	LIS-105	Introduction to Information Technology	2018	<p>1.Gain knowledge on the concepts of computer basics and Network technologies</p> <p>2.Understand the concepts of Operating Systems, Programming Languages and types of softwares</p> <p>3.Learn the Database Management systems, steps in development of databases and get an idea on different library software packages</p>
6.	LIS-106	Human Values and Professional Ethics-I	2018	<p>i. The student will be enriched with several</p>

				<p>aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	LIS-201	Information Sources and Services	2018	<p>1.Learn documentary and non-documentary sources and different types of information sources</p> <p>2.Know about the Indian and British National Bibliographies, and Electronic Books</p> <p>3.Understand the virtual reference service and translation Services</p>
8.	LIS-202	Knowledge Organization: cataloguing Theory	2018	<p>1.Understand the basic ideas on catalogue, forms of the catalogue, Main Entry and added entries</p> <p>2. Know the Canons, Principles and Laws of Cataloguing</p>

				3.Gain the knowledge on different types of subject headings, Cooperative and Centralized cataloguing .
9.	LIS-203P	Knowledge Organization: cataloguing Practice	2018	1.Gain knowledge on Anglo American Cataloguing Rules 2.Learn the preparation of Main entry and added entries for monographs and serial publications 3. Gain the skills on preparation of entries on cartographic materials, manuscripts and sound recordings
10.	LIS-204P	Meta data Standards- Practice	2018	1.Know the Metadata and its types, standards 2. Learn the skills on KOHA Software 3.Learn the skills on MARC 21 and Dublincore
11	LIS-205	Library Management	2018	1.Gain knowledge on meaning and purposeofmanagement, Organizational Structures 2.Able to identify the factors behind selection, procurement and accessioning of documents 3.Gain knowledge on a circulation system suitable for a library, different budgetary methods and its standards, norms and principles
12	LIS-206	Human Values and Professional Ethics-II	2018	i. Student will know the values of ethics in various fields including medical, social and

				<p>business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	LIS-301	Information Processing and Retrieval Theory	2018	<p>1.Understand the basic concepts on Information procession and Retrieval and various schemes on classification</p> <p>2.Learn the Indexing Systems and Techniques and their Evaluation Criteria and Studies</p> <p>3.Gain knowledge on Web based Information Retrieval Systems</p>
14	LIS-302	Library Automation and Digital Library	2018	<p>1.Learn the basics of Library Automation, various modules of library automation software packages and their features</p> <p>2.Gain knowledge on basic concepts and characteristics of digital libraries</p> <p>3.Know about network and communication devices, digitization and metadata</p>
15	LIS-303	Search and Search strategies	2018	<p>1.Gain knowledge on search strategies, various types of databases, internet searching tools</p> <p>2.Understand Z39.50 protocol and Wide area information servers</p> <p>3. 3.Learn the search engines and meta search engines.</p>

16	LIS-304B	Internship	2018	<p>1. Attain skills on all types of sections and its maintenance in libraries in which they underwent training</p> <p>2. Get skills on maintenance of Digital Library</p> <p>3. Learn the skills on preservation and conservation of manuscripts and digitization.</p>
17	LIS-304C	Academic Library System	2018	<p>1. Know the basic objectives, growth and development of Academic Libraries in India, UK and USA</p> <p>2. Learn about an overview of higher education in India, UGC, its powers and functions and its role in the development of academic libraries</p> <p>3. Understand the total design of the building, techniques of financial management, and know the organization of library and information services needed by distance learners and special users</p>
18	LIS-305A	Information Literacy (OE)	2018	<p>1. Learn the concepts of Information Literacy and sources of Print and Electronic Information</p> <p>2. Get the skills on information access through INFLIBNET Network</p> <p>3. Able to understand the Internet and its search techniques and Intellectual Property Right</p>
19	LIS-401	Research Methodology	2018	<p>1. Understand the definition, need and purpose of various research methods</p> <p>2. Get the knowledge on Research design, techniques and tools</p> <p>3. Gain the skills on Data analysis and Interpretation of Data in SPSS.</p>

20	LIS-402P	Software for Libraries-Practice	2018	<p>1. Attain knowledge on D Space, Greenstone Digital Library Softwares</p> <p>2. Learn about Koha : Library Management Software, E-Resources, Directory of Open Access Journals,</p> <p>3. Get an idea on designing of Web Page and Data Mining</p>
21	LIS-403	Dissertation/Project Work	2018	<p>1. Gain Knowledge on how to select the theme for their work</p> <p>2. Learn the writing styles, preparation of questionnaire, data analysis and interpretation and Citation styles</p> <p>3. Get the skills on findings and conclusion in dissertation</p>
22	LIS-403A	Management of Information System	2018	<p>1. Know the basic concepts in Management, and various methods of decision-making and its application to Library and Information Centers</p> <p>2. Understand the budgeting techniques and methods and policies and procedures</p> <p>3. Gain knowledge on system analysis, PERT/CPM</p>
23	LIS -404C	Information Processing and Retrieval: UDC and Indexing Practice	2018	<p>1. 1. Gain knowledge on Universal Decimal Classification</p> <p>2. Learn different Indexing systems</p> <p>3. Understand the design and development of thesaurus</p>
24	LIS-405-B	Technical Writing	2018	<p>1. Know the definition and types of technical writing</p> <p>2. Attain the idea on technical writing process and styles</p>

				3. Get the skills on technical writing techniques, use of MS-Office for preparation and presentation of technical writing
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17. Mass Communication & Journalism

18. Performing Arts(Music)

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	162	MA Performing Arts(Music)	2018	PAM-105 (P) Compulsory Foundation in Music -1 Clear cut training of foundation in Carnatic Music	Proof Enclosed
2	162	MA Performing Arts(Music)	2018	PA-M 204 (P) Vilambakala Kritis Training to Perform slow tempo songs which is difficult rather than fast tempo songs	Proof Enclosed
3	162	MA Performing Arts(Music)	2018	PA-M 205 (p) Compulsory Foundation in Music -2 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
4	162	MA Performing Arts(Music)	2018	PA-M 302 Compositions in Rare ragas widening knowledge to perform rare ragas	Proof Enclosed
5	162	MA Performing Arts(Music)	2018	PA-M 303 Concert Ability to plan and execute a successful Carnatic concert Ability to create self employment opportunity	Proof Enclosed
6	162	MA Performing Arts(Music)	2018	PA-M 402 Ragam Tanam Pallavi Learn and inculcate the most creative part of Carnatic Music To help student to shape out the creative rendering style of the student	Proof Enclosed
7	162	MA Performing Arts(Music)	2018	PA-M 403 Project work Introduce to the methodology of doing research in music and introducing to data collection, analysis etc and train up him to look into the facts based on evidences	Proof Enclosed
8	162	MA Performing Arts(Music)	2018	PA-M 404A Manodharma Sangeetha To enrich the knowledge of innovative music To educate the student to sing raga alapana neraval and Kalpanaswara which are the crucial	Proof Enclosed

				Sections of creative music.	
9	162	MA Performing Arts(Music)	2018	PA-M 404C Compositions of Dance Repertoire Knowledge in application of music in other art fields like theatre, opera etc Knowledge to select and utilize ragas according to the theme and text.	Proof Enclosed

19. Philosophy

16.philosophy				
S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
35.	101	Classical Indian Philosophy	2018	. 1The Student has applied the knowledge of classical Indian Philosophy. 2.The Student has analyzed the principles of classical Indian Philosophy
36.	102	Epistemology Indian	2018	1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
37.	103	Logic Indian and Western	2018	1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
38.	104	Western Philosophy- Greek and	2018	1.The Student has known the important issues of


		Medieval		Western Philosophy 2. The Student has understood the Principles of greek and medieval Philosophy
39.	105-A	Problems in Metaphysics	2018	1. The Student has known the Problems of Metaphysics 2. The Student has understood the Principles of Metaphysics
40.	202	Ethics- Indian	2018	1. The Student has known the Ethics in Indian Philosophy 2. The Student has understood the various Ethical Principles in Indian Ethics.
41.	203	Ethics –Western	2018	1. The Student has known the Ethics in Western Philosophy 2. The Student has understood the Ethical theories of Western Philosophy
42.	204	Modern Western Philosophy	2018	1. The Student has known the Problems of Modern Western Philosophy 2. The Student has understood the thoughts of Modern Western Philosophers.
43.	205-A	Philosophy of Education	2018	1. The Student has known the Contents of Philosophy of Education. 2. The Student has understood the Educational aspects of Philosophy of Educatio
44.	207	Audit course (HVPE)	2018	1. The Student has known the essence contents of human values.

				2. The Student has understood the Professional Ethics..
45.	301	Social and Political Philosophy	2018	1. The Student has known the contents of social Philosophy. 2. The Student has understood the Principles of Political Philosophy.
46.	302	Philosophy of Vedanta	2018	1 . The Student has known the Philosophy of Vedanta. 2. The Student has understood the Philosophical Doctrines of Vedantas
47.	303-A	Philosophical Approach to Gandhi	2018	1. The Student has known the metaphysical issues of Gandhi. 2. The Student has understood the Gandhian Philosophy
48.	303-B	Philosophy of B.R.Ambedkar	2018	1. The Student has analyzed the Philosophy of Ambedkar.. 2. The Student has applied the Philosophical aspects of Ambedkar.
49.	305-A	Philosophy of Value Education	2018	1.The Student has known the importance of Education... 2. The Student has understood the Philosophical values for life.
50.	305-B	Sri Venkateswara Studies	2018	
51.	401	Phenomenology and Existentialism	2018	1. The Student has analyzed the contents of Phenomenology.. 2. The Student has applied the Philosophical Principles of Existentialism
52.	402	Comparative Religion	2018	a.The Student has analyzed the aspects of Comparative

				Religion.. b. The Student has applied the Philosophical Principles of different Religions
53.	403-A	Philosophy of Jiddu Krishnamurti	2018	1.The Student has known the Philosophy of Jiddu Krishnamurti... 2. The Student has understood the Philosophical insights and of jiddu Krishnamurti
54.	403-B	Analytical Philosophy	2018	1. The Student has known the contents of Analytical Philosophy. 2. The Student has understood the Philosophy of Philosophers of Analytical Philosophy..
55.	403-C	Sri Vaishnavism	2018	1.The Student has analyzed the aspects of SriVaishnavism.. 2. The Student has applied the Philosophical Principles of .SriVaishvaism
56.	403-D	Research Methodology and Computer Applications	2018	1.The Student has analyzed the principles of Research Methodology.. 2. The Student has applied the computer operating and applying principles
57.	405-A	Philosophy of Yoga	2018	1.The Student has analyzed the principles of Research Methodology.. 2. The Student has applied the computer operating and applying principles

20. Physical Education

S.No	Name of the	Course Code	Year of introduction	Activities/Content with direct	Link to the relevant
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	Course			bearing on Employability/ Entrepreneurship/ development	Skill document
1	B.P.Ed	Bachelor of Physical Education	2014-15	100%	 B.P.Ed students employability . pdf
2	Ph.D	Ph.D	2008	100%	

21. Political Science & Public Administration

22. Population Studies

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	PS- 101	Population Characteristics and Theories	2018	<ul style="list-style-type: none"> i. Identify basic demographic concepts and definitions in Population studies ii. Impart knowledge on Population trends in size and growth of population at regional, national and global level. iii. Discover the implications of different theories on past and present population components with special reference to Malthusian theory
2.	PS - 102	Fertility	2018	<ul style="list-style-type: none"> i. Examine the basic concepts and measurements of fertility ii. Assess, compare and contrast trends in fertility and its determinants iii. Familiarize the concepts of nuptiality and factors affecting nuptiality
3.	PS – 103	Mortality	2018	<ul style="list-style-type: none"> i. identify the various concepts and measures of mortality ii. Examine the global levels and trends in mortality

				<ul style="list-style-type: none"> iii. and its determinants iii. Acquire knowledge on techniques of life tables, constructions of multiple-decrement life table and computational aspects for demographical analysis
4.	PS 104	Sources, Evaluation and Adjustment of Data	2018	<ul style="list-style-type: none"> i. Examine and compare merits and demerits of various sources of population data ii. Understand the evaluation of data, factors affecting completeness of data iii. Reproduce knowledge on population projections, calculations and applications
5.	PS – 105	Population Education and Extension	2018	<ul style="list-style-type: none"> i. Examine the components of population education and create awareness on population education among the students and youth ii. Acquire skills to organize Extension Programmes in population education at school, college and Non formal educational levels iii. demonstrate training on population education methods and techniques in order to create awareness on population education
6.	PS - 106	Human Values and Professional Ethics-I	2018	<ul style="list-style-type: none"> i. Identify the concepts of ethics and its relation to religion, politics and environment ii. Memorize the different aspect of values and interpret the best skills in understanding the merits of value related aspects iii. Demonstrate to interpret crime and theories of punishment with special reference to acquire knowledge on Manu and Yajnavalkya
7.	PS – 201	Migration and Multi Regional Demography	2018	<ul style="list-style-type: none"> i. Explore the different types and trends in migration ii. Apply skills in measurement, causes and consequences of different migrations in different regions iii. Explore the theories and recommend suitable

				policies of migration
8.	PS – 202	N.G.O Management & Field Work Orientation	2018	<ul style="list-style-type: none"> i. Understand the role, importance and establishing of NGO ii. Explore the sources of funding of NGO’s at national and international level iii. Explore demographic data by working with individuals, groups and communities
9.	PS - 203	Statistical Methods	2018	<ul style="list-style-type: none"> i. Familiarize the basic statistical methods and its applications to demographic data ii. Demonstrate knowledge on methods and techniques of sampling iii. Acquire skills in processing of data with computer
10.	PS - 204	Population Sociology	2018	<ul style="list-style-type: none"> i. Examine the basic sociological concepts, and evaluate the relationship of sociology to other social sciences ii. Identify the social institutions, social change and socialization iii. Explore the sociological theories of fertility and its application in contemporary society
11.	PS - 205	Fundamentals of Social Work	2018	<ul style="list-style-type: none"> i. Memorize the basic concepts of social work and its nature and scope. ii. Recognize the different methods of social work iii. Explore the social work practice in different fields iv. Acquire knowledge on the evolution of social work in India v. Explore the professional associations and importance of networking in social work profession
12.	PS – 206	Human Values and Professional Ethics - II	2018	<ul style="list-style-type: none"> i. Acquire and gain knowledge on different concepts of human values and behavioural changes. ii. Recognizing the medical ethics and views of

				<p>Charaka, Sushruta and Hippocrates on moral ethics of medical and health care professionals.</p> <p>iii. Acquire skills on environmental ethics and its relation to Health</p>
13.	PS - 301	Population Geography	2018	<p>i. Enumerate the geographical factors affecting the distribution of population</p> <p>ii. Awareness and understanding of trends in urbanization and its impact on ecological imbalance, global warming, greenhouse effects.</p> <p>iii. Able to assess changing pattern of land use, conservation of resources and critical thinking of policies, programmes for better management of environment</p>
14.	PS - 302	Research Methodology	2018	<p>i. Demonstrate in conducting population research and surveys</p> <p>ii. Prepare research design and apply sampling techniques</p> <p>iii. Discover skills in methods and tools of data collection, data analysis, interpretation, and report writing.</p>
15.	PS - 303	Community Health	2018	<p>i. Discover comprehensive knowledge on concepts of community health, illness, disease prevention</p> <p>ii. Critical thinking on epidemiology, communicable diseases and its prevention</p> <p>iii. Understand and appreciate the concepts of health, nutrition, balance diet, nutrition deficiency diseases and National Health Programmes</p>
16.	PS – 304 a	Population Psychology	2018	<p>i. Appreciate the scope of psychology and the relationship between value of children and fertility</p> <p>ii. Familiarize and comprehend the significant psychological theories relevant to fertility and contraceptive behavior</p>

				iii. Demonstrate leadership and effective communication skills in promoting health and family planning
17.	PS – 304 b	Population Policies and Programmes	2018	<ul style="list-style-type: none"> i. Explore population policies related to fertility, mortality and migration ii. Acquire the knowledge on methods of family planning and acts relating to medical termination of pregnancy, age at marriage and also registration of vital events iii. Apply best practices and strategies for promoting family welfare programme.
18.	PS – 304 c	Gerontology	2018	<ul style="list-style-type: none"> i. Understand the scope of gerontology and demographic dimensions of the elderly ii. Critically explore and analyze changes in status of elderly health, problems and needs of elderly iii. Acquire skills in dealing elderly issues like neglect, abuse, violence and abandonment caregivers stress and elderly neglect
19.	PS – 304 d	Population and Sustainable Development	2018	<ul style="list-style-type: none"> i. Examine the concepts and theoretical issues relating to sustainable development and sustainable goals ii. Assess and measure the quality of life, resource creation, and management and distribution iii. Critically think of the relationship between population, environment, poverty and population sustainable growth
20.	PS-305 a	Principles of Population Studies	2018	<ul style="list-style-type: none"> i. Explore the components of population change, trends in size and growth of population ii. Discover the concepts of fertility, mortality and migration iii. Acquire skills in exploring the sources and quality of data on fertility, mortality and migration
21.	PS – 305	Population, Society and	2018	<ul style="list-style-type: none"> i. Understand the components of population change

	b	Environment		<ul style="list-style-type: none"> ii. Demonstrate sociological perspective to analyze the relationship between man, ecology and environment iii. Critical thinking of Sustainable development and its concepts
22.	PS - 401	Communication for Family Welfare Programmes	2018	<ul style="list-style-type: none"> i. Examine the elements in communication process ii. Understand and apply different approaches to communication iii. Critically analyze and apply factors influencing a various communication methods to promote family planning
23.	PS – 402	Reproduce Health and Adolescent Issues	2018	<ul style="list-style-type: none"> i. Examine the anatomy and physiology of human reproduction, conception and pregnancy ii. Describe the male and female reproductive health problems iii. Assess and examine various adolescent issues
24.	PS - 403	Population Growth and Development	2018	<ul style="list-style-type: none"> i. Understand the indicators of development with special reference to population growth and development. ii. Discover the concepts of economic inequality and its causes iii. Examine the status of women and development and demographic consequence of women empowerment
25.	PS – 404 a	Dissertation	2018	<ul style="list-style-type: none"> i. Develop in-depth knowledge of field work and community surveys ii. Acquire the skills to present and discuss the findings through seminars iii. Explore the skills in preparation and presentation of research findings
26.	PS – 404	Demography of Andhra Pradesh	2018	<ul style="list-style-type: none"> i. Acquire knowledge on basic trends and changes

	b			<ul style="list-style-type: none"> ii. in population growth in Andhra Pradesh ii. Examine the migration and urbanization, problems of slums and related policies with special reference to Andhra Pradesh iii. Explore the population policies and programmes in Andhra Pradesh
27.	PS – 404 c	Social Work in Industry and Human resource Management	2018	<ul style="list-style-type: none"> i. Understand the concepts, principles and functions of Management ii. Acquire skills on difference process of Human Resource management iii. Demonstrate the organizational behavior, management conflicts and organization of interventions iv. Concepts of Industrial relations and related legislations for industrial workers
28.	PS – 404 d	Health Economics	2018	<ul style="list-style-type: none"> i. Explore the concepts in economics in relation to health and population dynamics ii. Acquire skills in assessing costing and health economics iii. Critically analyze and evaluate general health status and quality of life and also measurement of health outcomes
29.	PS – 405 a	Rural, Urban, Tribal Development	2018	<ul style="list-style-type: none"> i. Explore the characteristics of rural, urban and tribal community ii. Discover community development and experiment projects in rural, urban and tribal areas iii. Critically examine and understand the issues related to rural, urban and tribal areas and approaches to community development
30.	PS – 405 b	Social policies and planning	2018	<ul style="list-style-type: none"> i. Discover social policies in relation to Indian constitution. ii. Examine the approaches to social policy

				iii. Demonstrate and analyze various social policies and their implementation
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Masters in Social Work

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	MSW- 101	Sociology for Social Work	2018	<ul style="list-style-type: none"> i. Discover basic concepts in Sociology and examine the relation between individual and society. ii. Distinguish between Socialization, Social institutions and Social groups iii. Critically demonstrate , Social Stratification, Social Deviance, Social Change and Social Problems
2.	MSW - 102	Human Growth and Personality Development	2018	<ul style="list-style-type: none"> i. Memorize various stages of Human Growth and Development ii. Identify different concepts of Human Behavior like Motivation, Perception, Learning and Attitudes iii. Discover experience in assisting the person in Solving their Psycho social problems through personality development and adjustment
3.	MSW – 103	Social Work Profession & Field Work Orientation	2018	<ul style="list-style-type: none"> i. Recall various concepts like Social Service, Social Welfare, Social Development and Social Work

				<ul style="list-style-type: none"> ii. Experiment on Ethical Values of Professional Social Work and analyze current trends in Social Work iii. Design field work in Social Work and acquire skills to involve the client in problem solving process
4.	MSW 104	Social Work Practice with Individuals & Groups	2018	<ul style="list-style-type: none"> i. Recognize the basics Concepts , Techniques and Skills of case work ii. Apply different approaches of Case Work, Group Work iii. Evaluate the application of Social Case Work and Group Work at various settings like Schools, Hospitals, and Correctional Settings and in Communities.
5.	MSW – 105	Social Work Practicum - I	2018	<ul style="list-style-type: none"> i. Recognize the significance of Social Work in various settings ii. Illustrate the application of Social Work Methods in the agencies during their field practicum iii. Examine the applications of Social Work Principles and Skills in the functions of different organizational systems
6.	MSW - 106	Human Values and Professional Ethics-I	2018	<ul style="list-style-type: none"> i. Familiarize the concepts of ethics and its relation

				<p>to Religion, Politics and Environment etc.</p> <p>ii. Able to gain knowledge on different aspect of Values and Interpret the best Skills in understanding the merits of value related aspects</p> <p>iii. Discover to interpret Crime and Theories of Punishment with special reference to Manu and Yajnavalkya</p>
7.	MSW – 201	Social Work Profession & Field work Orientation	2018	<p>i. Recognize the Scope, Importance and Significance of Social Work Practice in different fields</p> <p>ii. Acquire Knowledge and Skills Essentials for Working with Groups and Communities</p> <p>iii. Formulate Capacity Building by organizing training and awareness programmes in the Field Work Settings</p>
8.	MSW – 202	Social Work Practice with Communities	2018	<p>i. Acquainted with advanced level of knowledge in Community organization and Social Work practice</p> <p>ii. Appraise various approaches in Community Organization and Current issues in Community Organisation</p> <p>iii. Organize community participation using PRA methods and techniques</p>

9.	MSW - 203	Social Action and Social Legislation for Social Work Practice	2018	<ul style="list-style-type: none"> i. Distinguish the elements of Social action, Models and Process of Social Action ii. Connect the Social Legislations with Social Work Practice iii. Appraise Laws pertaining to Women, children and Aged in Social work practice
10.	MSW - 204	Social Policy and Planning	2018	<ul style="list-style-type: none"> i. Examine the nature and Approaches of Social Policy in the Socio-economic and political context ii. Assess the implementation of Social Welfare Policies in Education, Health, Women, Children and Environment iii. Examine the Role of Social Workers in Formulating , Planning and Implementation of Social Policies
11.	MSW - 205	Social Work Practicum-II	2018	<ul style="list-style-type: none"> i. Examine the Nature, Scope and Functions of the different Government and non-profit organizations agency at ground level ii. Trained to assist their supervisor with in the limitations of the agency iii. Equipped with Professional Skills and Techniques through practical exposure
12.	MSW – 206	Human Values and Professional	2018	<ul style="list-style-type: none"> i. Summarize different concepts of Human Values

		Ethics - II		<p>and Behavioural changes required for adjustment in Family and Society</p> <p>ii. Demonstrates Medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics in Medical and Health care professionals.</p> <p>iii. Acquire Skills on Environmental ethics and the Environment and Health</p>
13.	MSW - 301	Social Work Intervention with Families	2018	<p>i. Discover the Family Centered Practice as a Model of Social Work practice and understand Family life management and Family Dynamics</p> <p>ii. Demonstrate Family Assessment and Application of Tools : Interviewing , Ecological assessment – Eco map , Generation assessment- Genogram, Triangle, Family Sculpture and Family Mapping</p> <p>iii. Integrate social work practice with Families and Social Work Therapeutic Interventions wherever appropriate</p>
14.	MSW - 302	Social Work in the Field of Health	2018	<p>i. Examine the concept of Health, factors affecting health and Indicators of Health.</p> <p>ii. Evaluate Primary and Community healthcare</p>

				<p>services with special references to communicable and Non-communicable diseases</p> <p>iii. Assess the relevance, domains and nature of Social Work Intervention in different Health settings.</p>
15.	MSW - 303	Counseling in Social Work Practice	2018	<p>i. Understanding the basics of Counseling and Approaches of Counseling</p> <p>ii. Develop ability to apply appropriate Counseling Techniques with Special Group</p> <p>iii. Demonstrate to apply Counselling Skills while working with clients in various settings like Health ,Family and School Settings</p>
16.	MSW – 304 a	Social work Research	2018	<p>i. Acquainted with advanced level of knowledge in Social Work Research process and Statistics</p> <p>ii. Illustrate single subject and evaluation Research Designs along with various Research designs</p> <p>iii. Facilitate methods of Sampling, Data Collection, Analysis, Statistical-Applications and Report Writing</p>
17.	MSW – 304 b	Gerontological Social Work	2018	<p>i. Identify theScope of Social Work in the field of Gerontology.</p> <p>ii. Illustrate Changes in the status of Elderly, Health problems and needs of Elderly.</p>

				iii. Experiment the social work interventional strategies to Elderly ,Care givers and Counseling
18.	MSW – 304 c	Social Work Practicum-III	2018	<ul style="list-style-type: none"> i. Analysis the role of Community and dramatize the Community Organisation in field work practice ii. Develop skills and expertise their Field Work exposure to organize community programmes iii. Examine the new Intervention programs in the area of their specialization to bring a solutions to the problems in different community
19.	MSW – 304 d	Human Rights and Social Legislation	2018	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Human rights ii. Distinguish various Social Legislations and Legislations related to Women and Children iii. Nurture the Social Work Professionals by creating awareness on various current issues and related Legislations
20.	MSW-305 a	Principles of Population Studies	2018	<ul style="list-style-type: none"> i. Demonstrate the concept of Population Studies, Components of Population Change Population Structure ii. Interpret basic concepts and measures of Fertility, Mortality ,Mobility and Migration iii. Critically evaluate the Concept of Multi Regional

				Demography, its uses and limitations
21.	MSW – 305 b	Fundamentals of Social Work	2018	<ul style="list-style-type: none"> i. Examine basic concepts, Principles and Methods of Social Work ii. Defend values and Principles of Professional Social Work and Code of ethics for Social Workers iii. Evaluate Social Work Education in India, Professional Associations, Problems of Professionalization and Networks in Social Work
22.	MSW - 401	Social Work Intervention with Children	2018	<ul style="list-style-type: none"> i. Examine the Significance and Development of Child Welfare Services with special reference to Child Rights ii. Appraise various Institutional and Non-Institutional services for children in need iii. Create Professional Knowledge on Social Work Intervention with children in difficult situations
23.	MSW – 402	Rural/Urban/Tribal Development & Empowerment –I	2018	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in rural Urban and Tribal community and Community Development Projects across the country ii. Trained to meet the challenges specifically related to Rural, Urban and Tribal communities iii. Will nurture the Social Work Professionals to

				become effective Social Worker and contribute to community by conducting awareness camps, strengthening Self-Help Groups and Facilitating Empowerment in the communities.
24.	MSW - 403	Social Work in the Field of Mental Health	2018	<ul style="list-style-type: none"> i. Understand the concept and importance of Mental Health and Psychiatric Social Work ii. Distinguish Psychiatric disorders and application of Therapeutic Interventions in Psychiatric Illness iii. Plan to provide Psychiatric Rehabilitation to assist Mentally Ill patients
25.	MSW – 404 a	Social Work in Industry & Human Resource Management	2018	<ul style="list-style-type: none"> i. Enrich knowledge on HRM, Personnel management, HR planning and ii. management systems iii. Appraise organizational behavior, conflict Resolution Strategies and Legislation related to industrial relations iv. Develop skills in Industrial Social Work Practice and the role and significance of Corporate Social Responsibility
26.	MSW – 404 b	Social Work Practicum-IV	2018	<ul style="list-style-type: none"> i. Acquires training in the organization as social worker and develop sound knowledge on social work which will motivate them to start an NGO

				<ul style="list-style-type: none"> ii. Evaluate projects and organize programmes for fund raising iii. Hypothesize research in their area of specialization through which they can suggest recommendations to agencies for improving quality
27.	MSW – 404 c	Social Work Practicum-V	2018	<p>Learn Skills and able to apply Principles during the Internship in Block Placement</p> <p>Explore research studies at Micro levels and submit reports as Mini Project Work</p> <p>Demonstrate as effective Social Worker in the agency in which they are placed</p>
28.	MSW – 404 d	Social Work and Disaster Management	2018	<ul style="list-style-type: none"> i. Summarize and understand the disasters and Disaster Management ii. Acquire a critical perspective of the policy framework, Institutional Structures and programmes for Disaster Management in India iii. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management
29.	MSW – 404 a	NGO Management	2018	<ul style="list-style-type: none"> i. Distinguish the Concept, Structure, Registration and By laws of NGOs ii. Demonstrate Organisational Management and source of funding of NGOs

				iii. Familiarize to organize Human Resource Management in NGOs
30.	MSW – 404 B	Health Education	2018	Discover the Roles, Responsibilities, Approaches and ethics in Health Education Describe the Behavioral, Environmental, and Genetic risk factors for Communicable and Non- communicable diseases. Evaluate channels of Health education and organizational health set up at Central, State and District levels

23. Sanskrit

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	SNSKT 101	Elements of Darsanas-I	2018	An understanding of the evolution of Darsanas I.To create an awareness of the Darsanas ii.Acquire Knowledge of the Baudda and Jaina Darsanas iii.To get the Knowledge of Meemamsa Sastra
2	SNSKT-102	Vedic Texts-I	2018	I.Students able to get the Vedic knowledge II.Students know the importance of Vedic gods III.Students are understanding the Vedic chandas IV.To make understanding the spiritual knowledge through Kathopanishat
3	SNSKT-103	PROSE AND POETRY-1	2018	I.An understanding of evolution of Sanskrit poetry across the ages until the modern age II.Get the knowledge of gadya kavya III.Understand the poetical skills IV.Understand the importance of

				kiratarjuneeya in Sanskrit literature
4	SNSKT-104	DRAMA, ALANKARA AND PROSODY -1	2018	Student will be able to get I.Understanding the features of Sanskrit drama II.Knowledge of organ and development of Sanskrit dramas III.Understanding the efficiency of kalida's poetic skill. IV.Get the knowledge of chandas V.Get the knowledge of different types of chandas
5	SANSKT105 (A)	HISTORY OF SANSKRIT LITERATURE – 1	2018	After completed of course the students are able to I.Know the origin and development of Sanskrit literature II.Know the importance of Vedas and its date. III.Know the meaning and contest of Brahmanas, Aranyakas and Upanishads IV.Know the social conditions as reflected in the Brahmanas V.Know the importance of Ramayana and its date
6.	SANSKT :105(B)	DRAMA AND POETRY -1	2018	I.Students will be able to gain understanding the features of Drama, Sentiment Moralities II.Through understanding the importance and place of Rasa in the Drama III.The knowledge about the skillfulness of Bhavabhutis Dramatergy IV.Recognize the transpiration of human experiences into dramatic experiences V.The knowledge about importance of Sandesa Kavyas in Sanskrit Literature
7.	SANKT :105 (C)	ALANKARA AND PROSODY - 1	2018	I.Students will understand the different types of Alankara II.Know the importance of Alankara in the poetry III.Understand the development of on the basis of similar IV.Recognize the Guru and Laghu in prosody V.Know the importance of melody through prosody
8.	SANSKT:106(A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KOUMUDI- 1	2018	After complication of the course students are able to- I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs

				IV.Know the structure of vibhaktis and roots system and develops their writing skills without grammatical mistakes..
9.	SANSKT:10 6 (B)	KAVYALANKARA SUTRA VRITTI -I	2018	I.Know the definition of poetry and prose II.Know the different types of Kavya III.Understand the different types of Riti IV.Understand the Pada and Padartha Doshas.
10.	SANSKT:10 7	HUMAN VALUES AND PROFESSIONAL ETHICS -I	2018	After completion of the course students are able to I.Understand Bhagavad Gita as a guide for modern life style II.Know the principles of Buddhism and Jainism III.Realize the necessary of practicing Human values and ethics in walks of life IV.Acquire the knowledge of Good and Bad V.Know the about crime and punishment according manu and Yajnavalkya
11	SANSKT – 201	ELEMENTS OF DARSANAS –II	2018	After completion of the course students are able to – I.Understand the knowledge of upamana and sabda pramanas II.Get the knowledge of Ayatharthanu Bhava III.Understand the Bahavana IV.Understand the Principals of Sankhya
12	SANSKT – 202	VEDIC TEXTS –II	2018	Students will know- I.The importance of Suktas II.The definition and purpose of Nirukta III.The meaning of Vedic words
13	SANSKT – 203	PROSE AND POETRY - II	2018	Students will able to get I.The beautification of prose literature. II.Enhancement of knowledge in appreciation of classical poetry III.Understanding about text that are selected. IV.Teaching skills in prose and poetry.
14	SANSKT – 204	DRAMA ALANKARA AND PROSODY – II	2018	Students will know I.The different characteristic features in Dramas

				<p>II.The importance of nature and hermitages</p> <p>III.The features of Alankara and Classification of Alankaras</p> <p>IV.The knowledge of prosody</p>
15	SANSKT – 205 (A)	HISTORY OF SANSKRIT LITERATURE –II	2018	<p>After the completion of the course students are able to</p> <p>I.Know the features of Mahakavyas</p> <p>II.Know the structure of Drama and social message</p> <p>III.Know the moral values through the tales</p> <p>IV.Get the glance of classical Sanskrit literature</p>
16	SANSKT – 205 (B)	DRAMA AND POETRY - II	2018	<p>I.Get knowledge of good</p> <p>II.Know the character of Hero and Hero in etc., in the Drama</p> <p>III.Know the changes stories between original and creativeness</p> <p>IV.Know the importance skill fullness in poetry of Kalaidasa</p>
17	SANSKT – 205 (C)	ALANKARA AND PROSODY - II	2018	<p>I.Know the features and Examples</p> <p>II.Understand the different types of Uktis in Alankaras</p> <p>III.Know the difference between stuti and Ninda Alankaras</p> <p>IV.Get knowledge of sikharini and Mandakranta vrittis</p> <p>V.Know the definition and importance of Gayatri Matras</p>
18	SANSKT - 206 (A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KAUMUDI – II	2018	<p>After complication of the course students are able to –</p> <p>I.Find out the main causes of semantic change</p> <p>II.Know the classification of suffixes the theories on the origin of suffixes</p> <p>III.Learn the morphological classification of verbs</p> <p>IV.Know the structure of vibhaktis and roots system and develops their writing</p> <p>Skills without grammatical mistakes</p>
SANSKID-206 (B)		KAVYALANKARA SUTRA VRITTI - II	2018	<p>I.Know the difference between Guna and Alankara</p> <p>II.Ability to understand the theory of Riti</p> <p>III.To enable to understand the usage of Sabdalankaras</p> <p>IV.Know the contribution of Vamana to alankara sastra</p>
20	SANSKT -	HUMAN VALUES	2018	<p>I.Understand the relevance of value based education in modern society</p>

	207	AND PROFESSIONAL ETHICS - II		<p>II.Understand the old traditions of medical ethics</p> <p>III.Understand the solutions of illegal and unethical practice</p> <p>IV.Understand the man and nature, Natural calamities and get the solution regarding those situations.</p>
21	SANSKT :30 1	(Sahitya) RASAGANGADHARA, (ANANA.I) – I (IE)	2018	<p>After the completion of the course students are able to</p> <p>I. Understand the Rasaswarupa</p> <p>II.Understand the purpose of Kavya and different types of Kavya</p> <p>III.Know the interpretations of Rasa sutras and ten types of Gunas</p> <p>IV.Know the Abhasas</p>
22	SANSKT :30 2	DHVANYALOKA - 1	2018	<p>on completion of the course students are able to</p> <p>I.Understand the Dhvani swarupam</p> <p>II.Understand the opinion of Dhvanyabhavavadins</p> <p>III.Know the Dhavanikavya Lakshana</p> <p>IV.Know the Vyangya as Kavyatma</p> <p>V.Get the knowledge of splendid sastra Dhvanyaloka</p>
23	SANSKT :30 3-A	KAVYAPRAKASA AND DASARUPAKA- 1(IE)	2018	<p>Students will get -</p> <p>I.The knowledge of definition of kavya, types of kavyas</p> <p>II.The Knowledge about verities of vyangya</p> <p>III.The Knowledge of vyanjanaswarupa</p> <p>IV.An idea of ten types of Rupakas</p>
24	SANSKT:30 3-B	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-I	2018	<p>On completion of the course students are able to</p> <p>I. Get the knowledge of sentence formation to write the essays on different issues</p> <p>II. Acquire the knowledge of Alankarikas</p> <p>III.Understand the different theories in Alankara sastra.</p> <p>IV.Understand the theory of Alankara and Rithi.</p>
25	SANSKT:30 3-C	Natyastraam Chapter I & VI only	2018	
26	SANSKT:30 3-D	Bhojaraja's Champu Ramayana	2018	

		(Balakanda only)		
27	SANSKT:30 4	Personality Development in Pancatantra (Mitrabheda and Mitrapraktikam only)	2018	.I.Know the losses arriving out of Non friend ship II.Know the world knowledge III.Achieving personality development through Panchatantra
28	SANSKT:30 5-A	Introduction of Sanskrit languag Infant Reader complete	2018	
29	SANSKT:30 5-B	Raghuvamsam (Ist canto only)	2018	on completion of the course students are able to I.Understand the greatness of Sanskrit Language II.Know the greatness of poetry III.Get knowledge on panchamahakavya's after the epic literature IV.Get the knowledge about the kalidasas Natural and beautiful creations V.Understand the uses of upamalankara by kalidasa
30	SANSKT:40 1	(SAHITYA) RASAGANGADHARA (ANANA-I)	2018	After completion of the course students are able to I.Know the number of Rasas in kavyas II.Know the uses of Rasa to elevate the situations in kavya III.Acquire the knowledge of Gunas and their role in Kavyas IV.Understand the differentiation of Bhava in Alankara sastra.
31	SANSKT :40 2	DHVANYALOKA –II	2018	Students will be able to get- I.The knowledge about different forms of schools II.Knowledge about the classification of Dhvani Siddhanta III.Knowledge regarding different alankara dhvanis IV.Know the difference between Rasadhvani and Rasavadalankara V.Know the main Rasa in Ramayana and Mahabharatha
32	SANSKT:40 3(A)	KAVYAPRAKASA AND DASARUPAKA–	2018	After the completion of the course students are able to – I.Understand the structure of the Kavya

		II		II.Get the knowledge of Rasa and it's Bhedas III.Find out the classification of Dhvani IV.Understand the Lakshana of Nataka V.Get the knowledge about 10 types of Nataka Bhedas
33	SANSKT:40 3(B)	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-II	2018	After the completion of the course students are able to – I.Get the knowledge of writing skills II.Acquire the knowledge of several Aesthetic poets like Mammata, Ruyyaka III.Understand the main theories on kavya of different poets IV.Get the knowledge of presentation skills on social related issues
34	SANSKT :40 3(C)	Kavyadarsa Chapter – I	2018	
35.	SANSKT :40 3(D)	KavyaMeemamsa first to Eight Adhyayas	2018	
36.	SANSKT :40 4	Introduction to Epigraphy and Manuscriptology	2018	After the completion of the course students are able to I.Get the knowledge of inscriptions II.Acquire the knowledge of Brahmi and kharoshthi scripts III.Get the knowledge of writing materials in Ancient India IV.Get the knowledge of edition and critical edition of Manuscripts
37.	SANSKT :40 5 (A)	Hithopadesa of Narayanapandita Mitrabha and Mitrabheda	2018	Students will be able to I.Get the moral values II.Understand the mentality of different kinds of people in the society III.Acquire the knowledge to behave a good citizen and a well human being IV.Understand the message through neetikavya
38.	SANSKT :40 5(B)	Kautilya'sArthasastra Chapter – I (Vinayadhikarikam)	2018	

24. Sociology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MASO-101	Classical Sociological Theories	2018	<ol style="list-style-type: none">1. This paper seeks to expose the students to the classical thinkers and their contribution in building theoretical sociology.2. To Compare and contrast the basic theoretical perspectives of sociology3. To acquaint students with recent trends in Sociological thought.
2	MASO -102	Sociological Research Methods and Statistics	2018	<ol style="list-style-type: none">1. This course aims to enable the students to understand the fundamental nature of the scientific approach towards social research and apply the skills in undertaking social research.2. To equip the students with strategies of development for different segments of society.3. To provide ways and means of understanding and studying social reality
3	MASO -103	Indian Society and Inclusive Growth	2018	<ol style="list-style-type: none">1. This paper presents a comprehensive and integrated profile2. To gain a better understanding of past and present structure and continuity of society

				3. Identify and analyze the problems in Indian society and suggest solutions from sociological perspective
4	MASO -104	Participatory Research	2018	<ol style="list-style-type: none"> 1. This paper is to inspire students to undertake research in partnership with stakeholders 2. To explain the emancipatory and empowering, collaborative and reflective approaches 3. To discuss the relationship between PRA and scientific method to incorporate the results to change the practice and policy.
5	MASO -105	Principles of Sociology	2018	<ol style="list-style-type: none"> 1. This paper gives the students an understanding of the basic principles of Sociology as an academic discipline 2. To analyze the ways in which people interact and function in groups 3. It provides a basic knowledge on the fundamental aspects of the important social institutions
6.	MASO -106	Human values and Professional Ethics - 1	2018	<ol style="list-style-type: none"> 1. To help students distinguish between values, skills, and understand the need, basic guidelines, content and process of value education 2. To provide Human Values and Ethics relating to Religion, Business, Law, Media and Environment 3. To provide an in depth knowledge about the Moral and ethical values for interpretation in

				their day to day life
7.	MASO -201	Applied Sociology	2018	<ol style="list-style-type: none"> 1. To help students develop clear understanding of key concepts in classical and contemporary sociology and how these concepts relate to some of the perennial themes in the discipline 2. To develop an appreciation of the link between sociological theory and practice 3. To help students master the art of explaining abstract material in clear, precise ways that can be easily understood even by a lay man
8.	MASO -202	Social Demography	2018	<ol style="list-style-type: none"> 1. To introduce the significance of population and its relation to society 2. To provide a theoretical knowledge of the basic concepts of population and changes 3. To enable the students to realize impact of population , changing global scenario, awareness on population control devices and analyse prospects
9.	MASO -203	Rural Sociology and Development	2018	<ol style="list-style-type: none"> 1. This course is to help the students to understand the difference between urban and rural development 2. To analyse the dynamics of rural Indian society in the context of its socio, political and economic contradictions 3. To evaluate the problems related to development in relation to the needs and aspirations of the marginalized sections
10.	MASO -204	Extension Work	2018	<ol style="list-style-type: none"> 1. This paper expose the students to apply sociological theories and principles in field areas

				<ol style="list-style-type: none"> 2. To give direct experience of social institutions and social problems through field work 3. To train for creative and innovative experiences in social field using research techniques
11	MASO -205	Environmental Sociology	2018	<ol style="list-style-type: none"> 1. This paper aims to provide the students with a comprehensive conceptual, theoretical and empirical backgrounds of interaction between Social world and Nature 2. To explore the relationship between human society and the larger natural environment 3. To prepare the students for further research in broad areas of environment and natural resource governance from sociological perspective
12	MASO -206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 1. To provide knowledge about Value oriented education, Medical ethics, Family values , Ethics and Moral code 2. To provide the Business, Environmental and social ethics followed and practiced 3. To enhance values of self-esteem and self-respect among students
13	MASO -301	Medical Sociology	2018	<ol style="list-style-type: none"> 1. This course will help the students to understand the concepts of health and illness 2. To understand the social facts of health and the root causes of illness 3. To apply sociological theories, concepts, and research to experiences of health, illness, health education, public health and the intense public issues related to health
14	MASO -302	Urban Sociology and Development	2018	<ol style="list-style-type: none"> 1. This paper attempts to analyse the urban social

				<p>world and its dynamics, various theoretical constructs concerning the patterning and growth of towns and cities</p> <ol style="list-style-type: none"> 2. To understand the various theoretical approaches to urban development and apply them to different aspects of cities 3. To study historical, economic, and political trends that have affected the growth and development of cities
15	MASO -303	Field Work and Extension (Village placement)	2018	<ol style="list-style-type: none"> 1. This paper aims at direct exposure of students to the real world and problems confronting society 2. Students will carry out field work in village for 10 days for practical experience 3. To learn about sociological study techniques like Participatory Rural Appraisal, Sampling, Interview and Extension
16	MASO 304	Generic electives (a) Human Rights	2018	<ol style="list-style-type: none"> 1. To study Human rights and Constitutional framework 2. To recognize the role of human rights in development, theories of development, development and tradeoff on human rights 3. To Understand the social, political, cultural, and comparative construction of human rights history , institutions, discourses, and futures
		(b) Sociology of Gender	2018	<ol style="list-style-type: none"> 1. To examine how society influences understandings and perception of differences between masculinity (what society deems appropriate behaviour for a “man”) and femininity (what society deems appropriate behaviour for a “woman”). 2. To understand influences of gender on identity

				<p>and social practices.</p> <p>3. To pay special focus on the power relationships that follow from the established genderorder in a given society and changes over time.</p>
		c) Gerontology	2018	<p>1. This paper aims at understanding physical, psychosocial, and cultural aspects of the aged</p> <p>2. To understand aging transitions and intergenerational issues at various contexts and its nexus</p> <p>3. To examine health and illness adjusting to loss and care of persons with chronic illnesses and rehabilitative needs</p>
		(d) Sociology of Andhra Pradesh	2018	<p>1. This paper aims to study the historical outline and emergence of Andhra society</p> <p>2. To understand the culture and various social movements in Andhra Pradesh</p> <p>3. To analyze the welfare and developmental programmes of the rural and urban Andhra Pradesh</p>
17	MASO -305	Open elective (a) Social Psychology and Personality Development	2018	<p>1. This paper aims at the understanding the relationship of cognition and attitudes of individual and society</p> <p>2. To focus on psychological aspects of the individual in the context of social behaviour</p> <p>3. To examine group dynamics such as group thinking and decision making, leadership, persuasion, conflict and cooperation)</p>
		(b) Business And Society	2018	<p>1. This paper aims at understanding the concepts of Social economy and knowledge management</p>

				<ol style="list-style-type: none"> 2. To examine the business community and social responsibility 3. To understand the inter-relation among business firms, organizations , public policy, business law and governance
23	MASO -401	Criminology	2018	<ol style="list-style-type: none"> 1. This paper seeks to describe the students about the different types of crime and scope of criminology 2. To illustrate the causes of crime and crime rates 3. To study the crime scientifically through data on crime, trends and various theoretical approaches
24	MASO-402	Industrial Dynamics	2018	<ol style="list-style-type: none"> 1. This paper aims to provide the students about the structure and process of industrial organizations from sociological perspective 2. To deal with the effects of industrialization on Indian social systems and institutions 3. To study the internal relations which are connected directly or indirectly with industry
25	MASO-403	Field Work	2018	<ol style="list-style-type: none"> 1. This paper aims at exposing students in analysing the data 2. To understand the different variations in viva-voce 3. To understand the recent patterns in Practice
26	MASO-404	Generic electives (a) Social Welfare and Welfare Administration	2018	<ol style="list-style-type: none"> 1. This paper aims at understanding the efficiency of resources and services to meet the needs of the individuals, families, groups and communities 2. To understand the problems of Schedule castes,

				<p>Schedule tribes, Backward classes and Minorities</p> <p>3. To facilitate social relationship and adjustments necessary for the disadvantaged sections, children, women, youth and elderly</p>
		(b) Social Entrepreneurship Development	2018	<p>1. The aim of this paper is to understand the theoretical positions of the Social entrepreneurship development</p> <p>2. To be aware of the contemporary approaches to social entrepreneurship</p> <p>3. To have comprehensive understanding of the context, process and effects of entrepreneurial activities</p>
		(c) Sociological Perspectives	2018	<p>1. This paper aims at the students to compare and contrast basic theoretical perspectives of sociology through rigorous scientific enterprise</p> <p>2. To sensitize the need for empirically grounded theories</p> <p>3. To acquaint students with the recent trends in Sociological thought</p>
		(d) Globalization and society	2018	<p>1. This paper aims at the students to understand the nature and dynamics of globalization and social context though various agencies</p> <p>2. To analyze the interconnected changes in the economic, cultural, social, and political spheres of society</p> <p>3. To understand ever-increasing integration of nations, regions, communities</p>
27	MASO-405	Open elective	2018	1. This paper aims to understand multifaceted

		(a) Globalization and Educational Pursuits		<p>nature of globalization and internationalization in the context of higher education</p> <p>2. To examine key concepts and theories of globalization, international and comparative education</p> <p>3. To make the students understand the Global citizenship from professional and academic perspective</p>
		(b) Visual Sociology	2018	<p>1. This paper aims at providing the students a new perspective in study of deliberate versus spontaneous behavior</p> <p>2. To be aware of recording social signals, expressions as spontaneous as possible</p> <p>3. To organize the recording of reactions and variations that occur as a response to the context</p>

25. Tamil

26. Telugu Studies

27. Urdu

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1.	URD 101	Mubadiyat-e- Lisaniyat aur Tareeq-e –Zaban-e- Urdu	2018	Course Outcomes: (1) Knowledge of history of basic Urdu Language. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.	
2.	URD 102	Dakniyat	2018	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyses the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani	
3.	URD 103	Classiki Nasr	2018	Course Outcomes: (1) Student will be able to understand the early Urdu poetry of Northern India. (2) Understanding the different forms of Urdu Poetry and poets.	
4.	URD 104	Arabi Zaban-o-Adab	2018	Course Outcomes: (1) Knowledge about the tradition of humor and satire in Urdu literature. (2) Differentiate between satire and humor in text. (3) Analyze the text and identify the elements of satire	

5.	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2018	<p>Course Outcomes:</p> <p>(1) Able to read, write and understand simple Arabic sentences.</p> <p>(2) Translate simple Arabic sentences.</p> <p>(3) Student will gain brief awareness of Arabic literature</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Qaseeda from Dakani period.</p> <p>(2) Differentiate between the Dakani and Urdu Qaseeda with respect of language, diction and style</p> <p>(3) Understand the salient features of Urdu Qaseeda with special reference to Nusrati, Sauda and Zauq.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Marsiya.</p> <p>(2) Compare and analyse the Marsiya of Anees and Dabeer.</p>	
6.	URD 106	Human Values and Professional Ethics – I	2018	<p>Course Outcomes:</p> <p>(1) Knowledge about tradition of Urdu Drama.</p> <p>(2) Distinguish various forms and techniques of Urdu Drama.</p> <p>(3) Analyses critically the text of Anar kali and Inder Sabha.</p> <p>Course Outcomes:</p> <p>(1) The student would enrich the knowledge about the Urdu poets and writers of Andhra Pradesh and Tamil Nadu.</p> <p>(2) Would understand the features of regional Urdu poets</p>	
7.	URD 107		2018	<p>Course Outcomes:</p> <p>(1) Understand, What are the Human Values accepted globally.</p> <p>(2) Knowing the importance of Human Values in religious</p>	
8.	URD 201	Rayalaseema ka Sher-o-Adab	2018	<p>Course Outcomes:</p> <p>(1) Have learn about the important historical events of Urdu Poetry.</p> <p>(2) Have knowledge about the most important schools of</p>	

9.	URD 202	Classiki Shairi	2018	<p>Out come</p> <p>(1) Student understands the brief history of Dakani Literature.</p> <p>(2) Student will be able to analyze the writings of Mohd Quli Qutub Shah.</p> <p>(3) Student will learn about the classical genres of Dakani</p>	
10.	URD 203	Hali : Hayat aur Adabi Khidmat	2018	<p>Out come</p> <p>(1) Student will know about the classics of Urdu prose.</p> <p>(2) Student will be able to read and understand the text.</p> <p>(3) Student will learn critical awareness of the text.</p>	
11.	URD 204	Farsi Zaban-o-Adab	2018	<p>Out come</p> <p>(1) Student will know about the classics of Urdu prose.</p> <p>(2) Student will be able to read and understand the text.</p> <p>(3) Student will learn critical awareness of the text.</p>	
12.	URD 205	Ghair Afsanavi Adab	2018	<p>Course Outcomes:</p> <p>(1) Student will be able to read, write and understand simple persian sentences.</p> <p>(2) Acquire Knowledge about the Persian poetic writings of Sa'di, Hafiz and Iqbal.</p> <p>(3) Student will gain brief awareness of Persian literature.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of Faiz Ahmed Faiz.</p> <p>(2) Identify the uniqueness of the poetry of Faiz Ahmed Faiz.</p> <p>(3) Understanding the salient features of the poetry of Faiz Ahmed Faiz.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of SulaimanAtherlaweed</p>	

13.	URD 206 206	Human Values and Professional Ethics –II	2018	<p>Course Outcomes: (1) Awareness of literature written in Rayalaseema. (2) Understand the style of new poets of this region. (3) Gain knowledge about two of the prominent prose writers of this area</p> <p>Course Outcomes: (1) Apply the skills of Ilm e bayan and identifying the phrases in poetry. (2) Applying Ilm e Areez skill in poetry.</p>	
14.	URD 207		2018	<p>Course Outcomes: (1) Awareness about Professional Ethics and its categorization. (2) Understand the importance of Professional Ethics in society.</p>	
15.	URD 301	Jadeed Nasr	2018	<p>Course Outcomes: (1) Knowledge about the forms and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to eminent Dakani poets. (3) Understanding Classiki Ghazal and Jadeed Ghazal with</p>	
16.	URD 302	Jadeed Nazm	2018	<p>Out comes (1) Understanding the forms of Urdu Nazm. (2) Critically estimate and explain the art and technique of famous Urdu poets. (3) Knowledge about the distinctive features Urdu Nazm</p>	

17.	URD 303	Urdu Tanqeed	2018	<p>Out come</p> <p>(1) The learner would understand about the mile stones of Urdu Novel.</p> <p>(2) The learner would understand the technical features of Urdu Novel.</p> <p>(3) The learner would understand about the Urdu Novel writers.</p> <p>Out come</p> <p>(1) Knowledge about tradition of Urdu Afsana.</p> <p>(2) Awareness of literary trends and its impact on Urdu Afsana.</p> <p>(3) Identifying and distinguishing the elements in Urdu Afsana</p> <p>Course Outcomes:</p> <p>(1) The learner would understand about the history of computer.</p> <p>(2) The learner would understand the technical features of Urdu computer.</p>	
18.	URD 304 A URD 304 B URD 304 C URD 304 D	(a) Sir Syed ka Khusoosi Mutalea (b) Iqbal ka Khusoosi Mutalea (c) Faiz ka Khusoosi	2018	<p>Course Outcomes:</p> <p>(1) The learner will know about the aims and objectives of the Journalism.</p> <p>(2) Distinguish between writings of news paper, radio and television.</p> <p>(3) The learner will know about the different fields of Urdu journalism.</p>	

19.	URD 305 A URD 305 B URD 305 C	(a) Urdu Ghazal (b) Jadeed Dakani Shairi (c) Urdu Afsana	2018	<p>Course Outcomes:</p> <p>(1) Knowledge about Jadeed Dakani Shairi. (2) Understand Jadeed Dakani Shairi and its vocabulary and diction. (3) Critical awareness about 5 eminent poets of Jadeed Dakani.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about types, techniques and issues of translation. (2) Distinguish between various types of translations. (3) Understand the tradition of Urdu translation and literary</p>	
20.	URD 401	Urdu Drama	2018	<p>Course Outcomes:</p> <p>(1) Knowledge of Basic Linguistics. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.</p>	
21.	URD 402	Adabi Tehreekat aur Rujhanat	2018	<p>Out comes</p> <p>(1) Knowledge about research, types of research and method of research. (2) Distinguish between various types of research writings. (3) Capable for selection of topic, material collection, designing the research work and writing research paper.</p>	

22.	URD 403	Tanz –o- Mizah	2018	<p>Out come</p> <p>(1) Knowledge about Literary criticism. (2) Vies and contributions of Hali and Shibli on literary criticism. (3) Understanding 6 schools of literary criticism.</p> <p>Out come</p> <p>(1) Understand the tradition of Ghari Afsanavi Adab and its salient features. (2) Literary importance of Maktoob Nigare and Inshaiya. (3) Literary importance of Khaka and Safarnama.</p> <p>Course Outcomes:</p> <p>(1) Understand the literary contributions of Altaf Husain Hali. (2) Importance and salient features of Mussadas, Muqaddama & Maqalat. (3) Understand the writing style of Hali as a biographer</p> <p>Course Outcomes:</p> <p>(1) Knowledge about form and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to 2</p>
23.	URD 404 A URD 404 B URD 404 C URD 404 D	(a) Urdu Tarjuma Nigari (b) Urdu Marsiya (c) Urdu Khudnavisht	2018	<p>Outcomes:</p> <p>(1) Able to know the history and trends of Telugu, Hindi and English languages. (2) Gain the comparative knowledge of various languages and their literature</p>
24.	URD 405 A URD 405 B URD 405 C	(a) Ibtdayi Urdu (b) Tehqeeq - Tariqekar (c) Urdu Qaseeda	2018	<p>Course Outcomes:</p> <p>(1) Specialized in the contributions of Sir Syed Ahmed Khan. (2) Contributions of Sir Syed Ahmed Khan, as literary person and as a educationist. (3) Understanding the contributions of his literary friends</p> <p>Course Outcomes:</p> <p>(1) Specialized in the contributions of Sir Mohammed Iqbal. (2) Contributions of Allama Iqbal with reference to Bal e</p>

S.V.U. College of Sciences

28. Anthropology

S. No.	Name of the Programme	Course Code	Title of the Course	Years	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	M.Sc. Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2018	<ul style="list-style-type: none"> a. Exposed to the basic introductory background about Socio-cultural Anthropology, its historical background and relation to other branches b. Provides knowledge about the entire subject matter of the socio-cultural anthropology as well as its different sub-branches. c. Exposed to social institutions d. Know the religion beliefs, rituals and myth
2	M.Sc. Anthropology	ANO : 102	Introduction to Biological Anthropology	2018	<ul style="list-style-type: none"> a. Exposed to the basic concept, meaning and scope of Biological Anthropology b. Explain how human being acts as the central figure of Anthropology c. Elucidate the major divisions of Biological/ physical Anthropology d. Know the inter-relationship between Biological Anthropology and other sciences e. To know how Man evolved in animal kingdom f. To understand how evolution has

					occurred and what are the evidences of evolution and addresses human variation and the causes of variations
3	M.Sc. Anthropology	ANO-103	Introduction to Archaeological Anthropology	2018	<ul style="list-style-type: none"> a. Able to define archaeological anthropology and its branches b. Understand the geological timescale, tool typology and technology c. The Course will explain the basic concepts and terminology used in prehistoric archaeology d. Understand chronological and cultural determinants of Indian and European prehistory
4	M.Sc. Anthropology	ANO-104P	Somatometry & Somatoscopy	2018	
5	M.Sc. Anthropology	ANO 105p	Archaeological Anthropology	2018	
6.	M.Sc. Anthropology	ANO 106	Economic and Political Anthropology	2018	<ul style="list-style-type: none"> a. Able to learn meaning and scope of economic anthropology b. To understand the division of labor by gender and age, exchange of goods and gifts, and to understand the market economy. c. Able to know the historical background of Political Organization besides types and trends of Political Organization including types like i.e. Band, Tribe, Chiefdoms and State d. To know the local institutions: panchayats (traditional and statutory)

7.	M.Sc. Anthropology	ANO 107	Human Values and Professional Ethics -1	2018	
8.	M.Sc. Anthropology	ANO 201	Comparative Ethnography and Indian Anthropology	2018	<ul style="list-style-type: none"> a. To understand the major ethnological regions of the world b. To know the ethnic and linguistic classifications c. Able to understand the traditional Indian culture d. To know the contributions of Indian anthropologists
9.	M.Sc. Anthropology	ANO 202	Principals of Genetics	2018	<ul style="list-style-type: none"> a. understand about the scope of genetics and its historical development b. to learn the biology of cell and cell division c. Exposed to the patterns of the inheritance d. Know about blood groups and their anthropological perspective
10	M.Sc. Anthropology	ANO 203	Research Methods in Anthropology	2018	<ul style="list-style-type: none"> a. To understand the fieldwork traditions in Anthropology b. To understand the concept of research and its purpose c. highlight the conceptual structure of a research design d. understand the various statistical tools in the analysis and interpretation of the data
11	M.Sc. Anthropology	ANO 204P	Craniology and Craniometry	2018	
12	M.Sc. Anthropology	ANO205P	Doing Ethnography	2018	
13	M.Sc. Anthropology	ANO206	Prehistoric India	2018	<ul style="list-style-type: none"> a. learn the regional distribution of

					<p>lower, middle, and upper Paleolithic cultures</p> <p>b. To learn the Mesolithic culture and typo- technology</p> <p>c. Learn the regional distributions of Neolithic cultures</p> <p>d. understand the copper and iron age</p> <p>e. exposed to the distribution of megaliths</p>
14	M.Sc. Anthropology	ANO 207	Human Values and Professional Ethics -II	2018	
15	M.Sc. Anthropology	ANB 301	Human Evolution and Fossil Evidence	2018	<p>a. Understand the evolutionary trends of primates, prosimianms to homosapiens</p> <p>b. To know the hominid evolution</p> <p>c. To know the Neanderthals distributions and extension</p> <p>d. Exposed to the homo sapiens distribution and feature of human species</p>
16	M.Sc. Anthropology	ANB 302	Human Genetics	2018	<p>a. understand the meaning and scope of human genetics</p> <p>b. know methods of studying human chromosomes and chromosomal abnormalities</p> <p>c. depict Inborn errors of metabolism with typical examples and human human ABO blood group system and its fundamentals</p> <p>d. know the concept of “one-gene-one-enzyme hypothesis” which explains</p>

					development of genetic diseases/disorders caused by defective genes controlling the functions of enzymes in metabolic pathways
17	M.Sc. Anthropology	ANB 303P	Human Osteology and Osteometry	2018	
18	M.Sc. Anthropology	ANB 304P	Dermatoglyphics	2018	
19	M.Sc. Anthropology	ANB 305	Anthropological Demography	2018	<ul style="list-style-type: none"> a. Know about the different population growth theories b. Learn the basic demographic variables c. Understand how the different factors regulates the population growth d. Understand the different demographic models e. Learn the genetic consequences of family planning
20	M.Sc. Anthropology	ANB 306	Biostatistics and Computer Applications	2018	<ul style="list-style-type: none"> a. To understand the concept of research and its purpose b. To enlighten the process of research and conceptual structure of a research design c. Understand the disease outcomes through measurement of descriptive, analysis of variance and regression models through computer applications d. Know the use of computers in the analysis data and power point presentation
21	M.Sc. Anthropology	ANB 307	Forensic Anthropology	2018	<ul style="list-style-type: none"> a. able to know about forensic anthropology, a specialized, applied

					<p>branch of physical/biological anthropology which deals with the crime investigation</p> <ul style="list-style-type: none"> b. understand how dermatoglyphic, somatoscopic characteristics and body fluids helpful in crime investigation c. know the use of skeletal remains in forensic investigations d. know the importance of modern methods in crime investigation
22	M.Sc. Anthropology	ANB 308	Palaeoanthropology	2018	<ul style="list-style-type: none"> a. understand the geological time scale and Pleistocene epoch b. know about tool making techniques and tool types c. gain knowledge about dating methods d. learn about Paleolithic, Mesolithic and Neolithic cultures in India
23	M.Sc. Anthropology	ANB 401	Biological Anthropology	2018	<ul style="list-style-type: none"> a. Understand the basic concept, meaning and scope of Biological Anthropology b. Know the biological variation in modern human populations c. Understand the human adaptability and impact of urbanization on humans d. Bio-cultural aspects of health and disease
24	M.Sc. Anthropology	ANB-402	Human Population Genetics	2018	Students will

					<ul style="list-style-type: none"> a. Explain the basic terms/concepts of human population genetics b. Appreciate the mechanisms of evolutionary forces in shaping biological diversity c. Understand the importance of Hardy – Weinberg Equilibrium especially the gene frequency changes with respect to Mutation, Genetic drift, Selection, Gene flow and to investigate them in empirical situations in human populations d. Know about breeding isolation and its implications in human population genetics. e. Understand various mating patterns (inbreeding and types of consanguineous marriages) and measure the inbreeding in families
25	M.Sc. Anthropology	ANB-403P	Advanced Biological Anthropology	2018	
26	M.Sc. Anthropology	ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2018	
27	M.Sc. Anthropology	ANB -405	Human Growth, Physique and Nutrition	2018	<ul style="list-style-type: none"> a. Know about the Differentiate the term growth, maturation and development b. To learn the methods of studying growth and the factors affecting the growth c. To understand the Human Physique and its Relation of Function, Disease and Behavior.

					d. Know the socio-cultural aspects of nutrition and nutrients in health and diseases
28	M.Sc. Anthropology	ANB 406	Applied Biological Anthropology	2018	<ul style="list-style-type: none"> a. Know about various applications of anthropometry and kinanthropometry in various fields b. Understand about the importance of forensic anthropology in crime investigations c. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy d. Learn about the human geno project
29	M.Sc. Anthropology	ANB 407	Medical Genetics	2018	<ul style="list-style-type: none"> a. Understand the overlapping areas of anthropology and genetics, anthropology and medicine (Disease) b. Understand the different methods of identification genetic diseases c. Know about epidemiology, socio cultural and ecological dimensions of genetic diseases control and treatment d. Learn the knowledge, attitude and currying practices of genetic diseases
30	M.Sc. Anthropology	ANB-408	Epidemiology	2018	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health.

					<ul style="list-style-type: none"> b. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology c. Know about Complications of obesity on health its prevention and control d. Understand the complex web of biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
31	M.Sc. Anthropology	ANB -409	Applied Anthropology	2018	<ul style="list-style-type: none"> a. Know about various applications of anthropometry and kinanthropometry in various fields b. Understand about the importance of anthropology in crime investigations c. Understand about the importance of biological anthropology in study of various diseases
32	M.Sc. Anthropology	ANS 301	Theories of Culture	2018	<ul style="list-style-type: none"> a. Understand the Conceptual Contributions of E. B. Tylor, B. Malinowski, A. L. Kroeber, L. White, Unilineal Evolution (L. H. Morgan and E. B. Tylor); Multilineal Evolution (J. Steward); Universal Evolution (L. White) b. To know the British School; German-Austrian School; American – Distribution School of culture c. Know the Patterns of Culture (R.

					<p>Bendict); Basic Personality, Model Personality (Kardiner, Linton, Cora Dubois); Selfhood (Murphy); Symbolic (G. Obeysekere)</p> <p>d. understand the historical approaches of culture</p>
33	M.Sc. Anthropology	ANS 302	Social Anthropology of Complex Societies	2018	<p>a. Learn the meaning and approach of great and little traditions</p> <p>b. learn about the peasant societies and contemporary peasant societies</p> <p>c. know the culture of poverty, institution and complex societies</p> <p>d. understand problems of urbanization and social changes</p>
34	M.Sc. Anthropology	ANS 303P	Participatory of Research methods in Development Process	2018	
35	M.Sc. Anthropology	ANS 304P	Non-Governmental Organizations and Extension studies	2018	
36	M.Sc. Anthropology	ANS 305	Ecological Anthropology	2018	<p>a. Understand the environment and ecosystem in understanding the cultural modifications</p> <p>b. Know about the cultural ecology, cognitive ecology, single unified ecology, and ethno ecology.</p> <p>c. Learn issues and prospects on development projects and displacement</p> <p>d. Understand Biodiversity for sustainable development Knowabout Ecological protest movements (Chipko and Narmada</p>

					Bachao Andolan (NBA));
37	M.Sc. Anthropology	ANS 306	Applied Anthropology- Indigenous Communities	2018	<ul style="list-style-type: none"> a. Know the Similarities and Differences between Applied and Action Anthropology, Indigenous communities and applied anthropology. Indigenous rights. b. Know the process of acculturation and assimilation, socialization c. Know about applications of Anthropology in the management of health, agriculture, education and biodiversity and poverty eradication d. Gain the knowledge on tribal welfare, tribal problems, forest and property rights, shifting cultivation and tribal movements
38	M.Sc. Anthropology	ANS 307	Anthropology of Religion Sacred complexes in India	2018	<ul style="list-style-type: none"> a. Know about meaning and relation with power and political leverages, ethnic identity and other aspects of culture in tradition and modern societies b. Know the different anthropological theories of religion c. Know the issues of right of food among by Hindus, five symbols of sikh identity, Aspects of sarora ritual and Shamansism, and Christianity in India d. To understand Contemporary issues of religious violence, secularism and fundamentalism

39	M.Sc. Anthropology	ANS 308	Anthropology and Career Promotion	2018	<ul style="list-style-type: none"> a. Understand the anthropology in competitive examinations b. Know about participatory research appraisal c. Exposed to the issues in tribes, tribal problems and cast populations d. Learn the books to be consulted, review of questions and scheme of valuation
40	M.Sc. Anthropology	ANS 401	Structural Anthropology	2018	<ul style="list-style-type: none"> a. Know the social structure and function of culture b. Understand about the ideal and real social structure and social organization c. Know the general notion of structuralism d. Learn the symbols and structure
41	M.Sc. Anthropology	ANS-402	Medical Anthropology	2018	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the etiology, control of infections and non-infections diseases c. Understand the ethno-medicine in the management of health and illness behavior d. Understand the modern medical systems and health care delivery services

42	M.Sc. Anthropology	ANS-403P	Computer Applications	2018	
43	M.Sc. Anthropology	ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2018	
44	M.Sc. Anthropology	ANS -405	Developmental Anthropology	2018	<ul style="list-style-type: none"> a. Know about the Concept of Development and Sustainable Development b. Understand the steps in project preparation, goals, process of implementation and monitoring. c. Role of government, NGOs and peoples participation in development d. Know the watershed management and irrigation, resettlement, (Narmada) poverty Alleviation (Velugu); Primary Education (VECs
45	M.Sc. Anthropology	ANS 406	Culture and Management	2018	<ul style="list-style-type: none"> a. Know the concept of organizational culture. Its links with cultural anthropology Organizational ethnography. Anthropology of work b. Understand the Theories of organizational culture. Different anthropological traditions c. Know the How culture affect management Changes in management styles Future outlook. d. To understand the Ethno methodological approaches, Organizational symbolism. Integration, differentiation and fragmentation as three perspective approaches to organizational culture
46	M.Sc. Anthropology	ANS 407	Anthropology of Displaced	2018	<ul style="list-style-type: none"> a. Know the peoples perception towards

			Populations		<p>development and displacement</p> <p>b. Understand the role of government and non-government agencies in the process of displacement, resettlement and rehabilitation.</p> <p>c. Understand policy issues relating development and displacement in legal implications of displacement and rehabilitation</p> <p>d. Learn the Socio-Cultural effects of displacement, Socio disorganization, process of disintegration and reintegration</p>
47	M.Sc. Anthropology	ANS-408	Visual Anthropology	2018	<p>a. Know about the concept, scope and Historical Development of visual anthropology</p> <p>b. Know about the appraisal of ethnographic films in cultural context</p> <p>c. Knowledge about descriptive studying of Visual data produced by Cultures</p> <p>d. To understand the ethnographical films, still photos film shootings and commentary</p>
48	M.Sc. Anthropology	ANS -409	Environmental Anthropology	2018	<p>a. Know the meaning and scope ecosystem of homeostases, ecological niche and ecosystem development</p> <p>b. Understand the various theoretical formulations</p> <p>c. Understand Biodiversity for Sustainable Development;</p>

					<p>Development Projects (Hydro-electric, Irrigation Projects and Industries) and Displacement.</p> <p>d. Exposed to the different ecological issues and environmentalism towards development</p>
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29. Biochemistry

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	BCH101	Biochemical and Biophysical methods	2018	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	BCH 102	Molecular Physiology and community nutrition	2018	<ol style="list-style-type: none"> 1. Gain the knowledge about circulatory and excretory systems. 2. Know the importance of muscular and nervous system. 3. Health benefits and malnutrition of proteins and fats. 4. Know the importance of nutrition in maintenance of health and diseases.
3	BCH 103P	Practical related to Biochemical Preparations and Analysis	2018	<ol style="list-style-type: none"> 1. Learn safety and precautionary measures for working in a laboratory. 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for

				<p>conducting experiments</p> <ol style="list-style-type: none"> 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological samples.
4	BCH 104P	Practical related to Analytical methods	2018	<ol style="list-style-type: none"> 1. Learn how to standardize various biomolecules. 2. Separate biomolecules by paper chromatography and thin layer chromatography 3. Demonstrate separation of protein by electrophoresis. 4. Isolation and spectrophotometric characterization of plant pigments.
5	BCH 105P	Human values and Professional ethics-I	2018	<ol style="list-style-type: none"> 1. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 2. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 3. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 4. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas 5. Gain the knowledge about views on Manu and Yajnavalkya
6	BCH 106	Cell and Biomolecules	2018	<ol style="list-style-type: none"> 1. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 2. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 3. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 4. Understand the concept of structural organization of nucleic acids
7	BCH 201	Energy metabolism	2018	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism.

				<ol style="list-style-type: none"> 3. Gain in knowledge in Carbohydrate metabolism and their associated disorders. 4. Describe the details of lipid metabolism.
8	BCH 202	Metabolism of Nitrogen based molecules	2018	<ol style="list-style-type: none"> 1. Understand the anabolic and catabolic reactions of proteins and aminoacids. 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	BCH 203P	Practical related to Enzymology	2018	<ol style="list-style-type: none"> 1. Learn about estimation of various enzymes in biological sample. 2. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 3. Learn about the factors affecting enzyme activity and determination of K_m. 4. Demonstrate the Immobilization of enzymes.
10	BCH 204P	Practical related to Molecular Biology	2018	<ol style="list-style-type: none"> 1. Isolate nucleic acids from various sources. 2. Estimate the nucleic acids quantitatively. 3. Determine the melting temperature. 4. Determine the purity of DNA by UV method.
11	BCH 205	Human values and Professional ethics-II	2018	<ol style="list-style-type: none"> 1. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 2. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 3. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical

				<p>abuses and work ethics.</p> <ol style="list-style-type: none"> Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy.
12	BCH 206	Enzymology	2018	<ol style="list-style-type: none"> Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. Describe the concepts of co-operative behavior and allosteric regulation.
13	BCH 301	Microbial Biochemistry and Genetics	2018	<ol style="list-style-type: none"> Understand the basics of microbiology like nomenclature and classification of microorganisms, understand the various biological and non-biological method to control microorganisms The student will learn about different mode of nutrition in microorganisms and about viruses - Isolation, purification and characterization. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. Gain knowledge in bacterial genetics includes the different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism(CRISPR) and Describe the various types of mutations and its effect.
14	BCH 302	Molecular Biology	2018	<ol style="list-style-type: none"> The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase,

				<p>DNA ligase, and Regulation of replication.</p> <ol style="list-style-type: none"> 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis.
15	BCH 303P	Practical related to Microbiology	2018	<ol style="list-style-type: none"> 1. Handle the microscope. 2. Learn Methods of sterilization and preparation of various culture media, Purification techniques. 3. Identification of isolated bacteria, and Growth curve of microorganism. 4. Learn Staining techniques for bacteria and yeast. 5. Gain knowledge in the Preparation of wine from Grapes. 6. Production and estimation of alcohols, citric acid, lactic acid etc.
16	BCH 304P	Practical related to Clinical Biochemical Analysis	2018	<ol style="list-style-type: none"> 1. Collect and maintain the biological samples for clinical assay. 2. Estimate the blood and serum enzymes for diagnosis of diseases. 3. Qualitatively analyse the abnormal constituents in urine. 4. Work with diagnostic kits
17	BCH 305 Generic Elective (Two papers out of three)	<ol style="list-style-type: none"> a) Molecular Endocrinology b) Clinical Biochemistry Cell and Developmental Biology	2018	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
18	BCH 305 B	Clinical Biochemistry	2018	<ol style="list-style-type: none"> 1. Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. 2. Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system.

				<ol style="list-style-type: none"> Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract. Investigate the serum enzymes in liver
19	BCH-305c	Cell and Developmental Biology	2018	<ol style="list-style-type: none"> Acquire knowledge on basic concepts of Developmental Biology. Gain the proficient knowledge about zygote formation, blastula formation, gastrulation and many events in early development. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. Acquire knowledge about biomembrane concept and various membrane transport systems
20	BCH 306 Open Elective to others	<p>a) General Biochemistry</p> <p>b) Environmental Biochemistry</p>	2018	<ol style="list-style-type: none"> Understand the classification, structure and biochemical reactions of aminoacids and proteins. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. Understand the concept of structural organization of nucleic acids. <ol style="list-style-type: none"> Describe the Structure of porphyrins, Chemistry and functions of water and fat soluble vitamins. Students will be able to know how to conserve natural resources for future. Students will be able to describe differing types of <i>ecosystems</i> and their characteristic features. Gain the knowledge about different types of pollution in the environment. Know the Relation between human population and environment. <ol style="list-style-type: none"> Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. Learn about basic Radioactivity principles, measurement method

		c)Experimental aspects related to analytical methods		<p>and its biological applications.</p> <ol style="list-style-type: none"> 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
21	BCH 401	Genetic Engineering	2018	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research. 5. principle, Bioinstrumentation and applications of spectroscopy techniques.
22	BCH 402	Technical Writing, Biostatistics and Bioinformatics	2018	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in biological sequence analysis
23	BCH 403P	Practical related to Immunology and Hematology	2018	<ol style="list-style-type: none"> 1. Collect the blood samples and handle the microscope. 2. Analyze the blood samples. 3. Expert in immunodiffusion and immunoelectrophoresis techniques
24	BCH 404P	Practical/Project	2018	

	Open Elective to others (For other department students)	Methodology b) Biochemistry of diseases		<ol style="list-style-type: none"> 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis <p>1 Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates.</p> <p>2 Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system.</p> <p>3 Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract.</p> <p>4. Investigate the serum enzymes in liver diseases</p>
27		C) Nutritional Biochemistry	2018	<ol style="list-style-type: none"> 1. Determine the body composition and body weight by using various methods. 2. To describe the importance of protein and fats. 3. Gain knowledge on vitamins and minerals to maintain health. 4. Acquire knowledge on nutritional importance in different ages in the life

Immunotechnology

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	Core 1	Biochemical and Biophysical methods	2018	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement

				<p>method and its biological applications.</p> <p>3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields.</p> <p>4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques</p>
2	Core 2	Molecular Physiology and community nutrition	2018	<p>5. Gain the knowledge about circulatory and excretory systems.</p> <p>6. Know the importance of muscular and nervous system.</p> <p>7. Health benefits and malnutrition of proteins and fats.</p> <p>8. Know the importance of nutrition in maintenance of health and diseases</p>
3	Core 3P	Practical related to Biochemical Preparations and Analysis	2018	<p>1. Learn safety and precautionary measures for working in a laboratory.</p> <p>2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments</p> <p>3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods.</p> <p>4. Gain the knowledge about isolation studies of biological samples.</p>
4	Core 4P	Practical related to Analytical methods	2018	<p>1. Learn how to standardize various biomolecules.</p> <p>2. Separate biomolecules by paper chromatography and thin layer chromatography</p> <p>3. Demonstrate separation of protein by electrophoresis.</p> <p>4. 4. Isolation and spectrophotometric characterization of plant pigments</p>
5	Compulsory Foundation	Cell and Biomolecules	2018	<p>6. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division.</p> <p>7. Understand the classification, structure and biochemical</p>

				<p>reactions of aminoacids and proteins.</p> <p>8. Describe the classification, structure and biochemical reactions of carbohydrates and lipids.</p> <p>9. Understand the concept of structural organization of nucleic acids.</p>
6	Elective foundation	Human values and Professional ethics-I	2018	<p>10. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions.</p> <p>11. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom.</p> <p>12. Know about Purusharthas, Dharma, Artha, Kama, Moksha.</p> <p>13. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas.</p> <p>14. Gain the knowledge about views on Manu and Yajnavalkya.</p>
7	Core 1	Energy metabolism	2018	<p>1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life.</p> <p>2. Describe the importance of Electron transport and ATP production mechanism.</p> <p>3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.</p> <p>4. Describe the details of lipid metabolism.</p>
8	Core 2	Metabolism of Nitrogen based molecules	2018	<p>1. Understand the anabolic and catabolic reactions of proteins and aminoacids.</p> <p>2. Gain knowledge in the importance of aminoacids as biosynthetic precursors.</p> <p>3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders.</p> <p>4. How toxic chemicals metabolised by the body through detoxification and the mechanism of carcinogenicity.</p>

9	Core 3	Practical related to Enzymology	2018	<ol style="list-style-type: none"> 5. Learn about estimation of various enzymes in biological sample. 6. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 7. Learn about the factors affecting enzyme activity and determination of Km. 8. Demonstrate the Immobilization of enzymes
10	Core 4	Practical related to Molecular Biology	2018	<ol style="list-style-type: none"> 1. Isolate DNA from bacterial, plant and animal cells and RNA from yeast cells. 2. Estimate concentrations of DNA and RNA by conventional methods and UV absorption methods. 3. Determine the melting temperature(T_m) of DNA. 4. Learn procedures for isolation of phage M_{13} and single and double standard M_{13}DNA.
11	Compulsory Foundation	Enzymology	2018	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behaviour and allosteric regulation
12	Elective foundation	Human values and Professional ethics-II	2018	<ol style="list-style-type: none"> 6. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 7. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 8. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior,

				<p>ethical abuses and work ethics.</p> <p>9. Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population.</p> <p>10. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy</p>
13	Core 1	Microbial Biochemistry and Genetics	2018	<p>1. Understand the basics of microbiology like nomenclature and classification of microorganisms and different modes of nutrition in microorganisms.</p> <p>2. Learn and understand the various biological and non-biological methods to control microorganisms and Biology of subviral agents – Viroids, Prions, Satellite viruses.</p> <p>3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes.</p> <p>4. Gain knowledge in bacterial genetics like different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism (CRISPR) and various types of mutations and their effects</p>
14	Core 2	Immunology	2018	<p>1. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
15	Core 3	Practical related to Microbiology	2018	<p>1. Handle the microscope.</p> <p>2. Learn Methods of sterilization and preparation of various culture media, Purification techniques.</p> <p>3. Identification of isolated bacteria, and Growth curve of microorganism.</p> <p>4. Learn staining techniques for bacteria and yeast.</p> <p>5. Gain knowledge in the Preparation of wine from Grapes.</p> <p>6. Production and estimation of alcohols, citric acid, lactic acid</p>

				etc
16	Core 4	Practical related to Immunology	2018	<ol style="list-style-type: none"> 1. Perform RBC, WBC count and differential count. 2. Do all haematological tests that will be done in clinical labs. 3. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 4. Do Heme agglutination tests for identification of different antigens
17	Generic Elective (Two papers out of three)	a) Molecular Biology	2018	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b)Molecular Endocrinology		<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
		c)Cell and Developmental Biology		<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development

				<p>in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants.</p> <p>4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis.</p>
18	Open Elective to others (For other department students)	a) Basics of Immunology	2018	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation. 4. Apply knowledge in disease diagnosis through serological tests.
		b) Immunotechniques		<ol style="list-style-type: none"> 1. To purify and analyse the antigens and antibodies. 2. To apply different Hybridization techniques and ELISA, RIA. 3. To detect various diseases by application of antiisera. 4. To engineer antibodies and catalytic antibodies and produce drugs to allergies
19	Core 1	Microbial Biochemistry and Genetics	2018	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
20	Core 2	Immunology	2018	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical

				<p>distributions.</p> <p>3. Develop understanding about Biological data and database search tools.</p> <p>4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis</p>
21	Core 3	Practical related to Microbiology	2018	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
22	Core 4	Practical related to Immunology	2018	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing.
23	Generic Elective (Two papers out of three)	a) Molecular Biology	2018	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b) Molecular Biology	2018	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and

				<p>many gastro intestinal hormones.</p> <p>4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones</p>
		c) Cell and Developmental Biology	2018	<p>1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins .</p> <p>2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development.</p> <p>3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants.</p> <p>4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis</p>
24	Open Elective to others (For other department students)	c) Basics of Immunology Immunotechniques	2018	<p>1. Gain knowledge on essential features of different types of antigens, antibodies.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation.</p> <p>4. Apply knowledge in disease diagnosis through serological tests.</p>
25	Open Elective (b)	<i>Immunotechniques and their Applications</i>	2018	<p>1. To purify and analyse the antigens and antibodies.</p> <p>2. To apply different Hybridization techniques and ELISA, RIA.</p> <p>3. To detect various diseases by application of antiisera.</p> <p>4. To engineer antibodies and catalytic antibodies and</p>

				produce drugs to allergies.
26	Core 1	<i>Genetic Engineering</i>	2018	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
27	Core 2	<i>Technical Writing, Biostatistics and Bioinformatics</i>	2018	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis.
28	Core 3 P	<i>Practical related to Clinical Immunology, Biostatistics and Bioinformatics</i>	2018	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
29	Core 4	<i>Project Work</i>	2018	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods

				<ul style="list-style-type: none"> 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing
30	Generic Elective (a)	<i>Clinical Immunology</i>	2018	<ul style="list-style-type: none"> 1. Understand different types of immunity and components of the Immune System. 2. Gain knowledge on auto immune diseases, Animal models used to study them and the treatment for them. 3. Familiar with Clinical manifestation of graft rejection, general immunosuppressive therapy and immune tolerance to allografts. 4. Acquire the knowledge on oncogenes, Psychoimmunology and neuroimmunomodulation
31	Generic Elective (b)	<i>Applied And Molecular Immunology</i>	2018	<ul style="list-style-type: none"> 1. Develop skill in production of monoclonal antibodies. 2. How better enzyme immobilization enhances its activity and their industrial and clinical applications. 3. Familiar with different types of vaccines and how they help in prevention of diseases. 4. Acquire the knowledge on IPR and procedures for patent filing
32	General Elective (C)	<i>Immunopharmacology</i>	2018	<ul style="list-style-type: none"> 1. Understand about drug receptors, pharmacodynamics, pharmacokinetics, drug biotransformation. 2. Acquire knowledge on Immunomodulation therapy, malignancy therapy. 3. Gain knowledge on Prostaglandins, thromboxanes, leukotrienes and inhibitors of these molecules formation. 4. Familiar with Nitric oxide and its immunological effects.
33	Open Elective a	<i>Research Methodology</i>	2018	<ul style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Acquire hands on training on various computational tools and techniques. 3. Learn to apply hypothesis testing via some of the statistical distributions. 4. To acquire knowledge on research proposals and motivate

				students towards research
34	Open Elective (b)	<i>Immunological Diseases and Therapeutics</i>	2018	<ol style="list-style-type: none"> 1. Maintain the Clinical Immunology lab with all required standards. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on different types of immunodeficiencies, their treatment and about autoimmune disorders. 4. Familiar with Clinical manifestation in graft acceptance or rejection and how immunosuppressive therapy is useful. And about cancer immunotherapy.

30. Botany

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2018	<ol style="list-style-type: none"> 1. The student able to distinguish different species of lower plant groups. 2. Cultivation methods of Algae for industrial production of Single Cell Proteins, Agar Agar ,carragin and Nutraceuticals.Discuss the importance of morphological structure, classification, reproduction and economic importance of Algae.
	BOT-102	Taxonomy of Angiosperms	2018	<ol style="list-style-type: none"> 1) Plant identification skills 2) Herbaria preparation and documentation.
	BOT-103	Microbiology	2018	<ol style="list-style-type: none"> 1. Isolation and identification of Pathogenic and Non-Pathogenic micro-organisms. 2. Methods of cultivation of economically/industrially important microorganisms. 3. Plant disease identification and control methods.
	BOT-104	Human Values and Professional Ethics - I	2018	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day

				<p>today life.</p> <ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2018	<ol style="list-style-type: none"> 1) Identification of different Algal forms 2) Morphological description and use of Floral Keys for plant identification.
	BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2018	<ol style="list-style-type: none"> 2. Isolation, culture and staining methods for identification of micro-organisms. 3. Diagnosis of Plant deceases based on symptoms and control methods. 3. Histology of vegetative and reproductive structures and isolation
	BOT-201	Plant Ecology	2018	<ol style="list-style-type: none"> 1) Concepts of Ecology Students, relation between biotic and abiotic factors in an ecosystem. 2) Interaction between biotic communities and ecological energetics 3) Environmental pollution, Global warming and Environmental protection strategies and green energy production
	BOT-202	Plant Biochemistry and Metabolism	2018	<ol style="list-style-type: none"> 1) Biosynthesis of plant primary metabolites and chemistry. 2) Plant physiological processes water relation, plant nutrition and energy metabolism, 3) Metabolic changes in response to biotic and abiotic stress
	BOT-203	Plant Development and Reproduction	2018	<ol style="list-style-type: none"> 1. Wood formation and types 2. Reproductive structures. Mode of Reproduction
	BOT-204	Human Values and	2018	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to

		Professional Ethics - II		<p>Human values and performing of Professional Ethics in day today life.</p> <ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2018	<ol style="list-style-type: none"> 1. Plant metabolite analysis and metabolic enzyme activity 2. Methods for Phytodiversity analysis.
	BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2018	<ol style="list-style-type: none"> 1) Plant communities 2) Methods for analysis of environmental pollutants 3) Designs of waste water treatment plants. 4) Assessment of effect of Global warming on Plant systems 5) Study of chromosomal morphology and behavior in Mitosis and Meiosis 6) Practical Problem solving on genetic concepts
	BOT-301	Molecular Biology And Techniques	2018	<ol style="list-style-type: none"> 1. Nucleic acids properties and mechanism of DNA replication and damage repair, and Chromatin organization and Cell Cycle regulation 2. Gene expression, processing of Transcripts and Proteins, and mechanisms of regulation of gene expression in Prokaryotes and Eukaryotes. 3. Principles of Microscopy, Nucleic acid and protein separation and identification techniques and methods
	BOT-302	Biodiversity and Conservation	2018	<ol style="list-style-type: none"> 1. Knowledge on Phytodiversity, biodiversity centres and types of Biodiversity. 2. Phytodiversity analysis using Remote sensing 3. Causes for the loss of phytodiversity and conservation

				strategies
	BOT-303 IE	Biosystematics	2018	<ol style="list-style-type: none"> 1. Biosystematic Categories, 2. Omega Taxonomy 3. Taximetrics and Concept of Species
	BOT-304IE	Molecular Plant Pathology	2018	<ol style="list-style-type: none"> 1. Symptoms based Diagnosis of Plant Diseases 2. Methods of Plant Disease Management and pest control
	BOT-307 IE	Plants and Human Welfare	2018	<ol style="list-style-type: none"> 1. Food Yielding Plants as a source of food, fiber and timber. 2. Plants used in curing human diseases and other ailments in traditional medical systems and Veterinary diseases 3. Spices and condiments, Non timber forest products. 4. Preparation and application of Bio fertilizers, Bio pesticides, Bio insecticides, mushroom cultivation and plant based preservatives
	BOT-308 IE	Organic Farming and Mushroom Cultivation	2018	<ol style="list-style-type: none"> 1. Different types of compost preparation and their Nutritive value. 2. Biofertilizers and organic preparations, their marketing and farm management. 3. Vermicompost Technology 4. Identification of types of edible and poisonous mushrooms. 5. Method of cultivation of mushrooms and diseases management
	BOT-309 IE	Gardening and Nursery Techniques	2018	<ol style="list-style-type: none"> 1. Nurseries development and Management and Garden designing for different plant groups 2. <i>In vivo</i> and <i>in vitro</i> plant propagation methods 3. Plant nutrition and protection 4. Types of gardens and nurseries
	Practical-I	Molecular Biology And Techniques ; Biodiversity and Conservation	2018	<ol style="list-style-type: none"> 1.. Study of Chromosomal Behavior during Mitosis. 2. Isolation of DNA, RNA and proteins, Quantitative estimation 3. Assignments on DNA structure, Replication and Gene expression 4. Methods for Phytodiversity analysis. 5. Plant diversity conservation methods

Practical-II	Biosystematics / Molecular Plant Pathology	2018	<p>Biosystematics</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Molecular Plant Pathology</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium
BOT-401	Molecular Genetics & Genomics and Proteomics	2018	<ol style="list-style-type: none"> 1. Genetic basis of inheritance of genes and their mapping in eukaryotes and microbes 2. Molecular marker techniques and construction of genetic and physical maps. 3. Whole genome sequencing strategies, and structural and functional annotation. 4. Principles and methods of Transcriptome and Proteome analysis. 5. Mechanisms of evolution of genomes, New genes and proteins and construction of Phylogenetic trees. 6. Structural organization of plant genomes, Arabidopsis and rice genomes and applications of genome projects.
BOT-402	Plant Biotechnology	2018	<ol style="list-style-type: none"> 1. Techniques of Plant Tissue Culture and Applications. 2. Process of r-DNA technology 3. Production of genetically modified crops and Achievements
BOT-403 IE	Molecular Plant	2018	<ol style="list-style-type: none"> 1. 1.Signal transduction pathways and Senescence

		Physiology		<ol style="list-style-type: none"> 2. 2.Molecular mechanism of Photosynthesis 3. Synthesis and application of Nanomaterials. 4. Molecular Physiology of Stress and Flowering
	BOT-404 IE	Horticulture and Agricultural Biology	2018	<ol style="list-style-type: none"> 1. Propagation methods for horticultural crops 2. Soil science and fertility management for horticultural crops. 3. Seed production technology of horticultural crops.
	BOT-405 IE	Ethnobotany and Phytomedicine	2018	<ol style="list-style-type: none"> 1. Ethnobotanical knowledge 2. Medicinal plant Cultivation, Multiplication, Collection, Processing and Marketing 3. Sources of Plant Medicines, Formulations, Diagnostic features and their Biological activity.
	Practical – I	Molecular Genetics & Genomics and Proteomics; Plant Biotechnology	2018	<ol style="list-style-type: none"> 1) Isolation of genomic DNA and RNA and Quantification by Spectrophotometry. 2) Preparation of DNA denaturation curve 3) Restriction digestion of DNA, Agarose Gel Electrophoresis 4) PCR amplification of DNA. and RAPD analysis. 5) Precipitation of proteins ,Estimation of protein. 6) Determination of Isoelectric Point of proteins 7) Separation of proteins by SDS-PAGE and size determination 8) Problems related to genomics, proteomics and molecular evolution 9) Establishment of callus, organ and cell cultures
	Practical - II	Molecular Plant Physiology / Horticulture and Agricultural Biology / Ethnobotany and Phytomedicine	2018	<p>BOT-403 IE : Molecular Plant Physiology</p> <ol style="list-style-type: none"> 1. Extraction and Estimation of Chlorophyll pigments. 2. Assay of enzyme activity 3. Estimation of Carbohydrate, proteins and separation 4. Seed viability and germination 5. Metabolite accumulation under stress <p>BOT-404 IE: Horticulture and Agriculture Biology</p> <ol style="list-style-type: none"> 1. Isolation, Characterization and Identification of Rhizobium

				<ol style="list-style-type: none"> 2. Outdoor cultivation of Blue green Algae 3. Vermicompost production 4. Multiplication of VAM and Preparation Biofertilizers; 5. Establishment of nursery, different containers, soil transplantation techniques. 6. Plant propagation – layering, cutting, grafting. 7.. Layout and Designing of gardens and Lawns. <p>BOT-405 IE: Ethnobotany and Phytomedicine</p> <ol style="list-style-type: none"> 1. Recording medicinal practices and herbal formulations of tribal medicine by interviews and field study and preparation of report. 2. Development of medicinal plant nurseries in botanical garden. 3. Practical Methods of Cultivation, Propagation, Conservation and Protection of important Medicinal plants to develop familiarity. 4. Micro-propagation of Medicinal plants and Production of Callus from different Explants for Specific Biologically active Ingredients. 5. Practical demonstration of collection, processing and storage of Plant Medicines. 6. Demonstration of drug Formulation and Herbal cosmetics. 7. Organoleptic examination and physical and chemical properties.
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31. Biotechnology

	PROGRAMME	COURSE CODE	COURSE TITLE	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	M.Sc. Biotechnology	BTH 101	Structure and Functions of Biomolecules	2018	1. Understand the classification of carbohydrates and their biochemical functions.

					<ol style="list-style-type: none"> 2. Correlate the reactions of amino acids that are basis for identification tests and biochemical pathways. 3. Know the structure of different classes of lipids and their roles in biological systems. 4. Comprehend the structure and functions of nucleic acids
		BTH 102	Advanced Tools and Techniques	2018	<ol style="list-style-type: none"> 1. Learn about various techniques for isolation and concentration of macromolecules. They will also understand the principles and applications of different Microscopes 2. Understand the techniques of chromatography, centrifugation and electrophoresis 3. Achieve a basic understanding of characterization of biomolecules by different Spectroscopic techniques 4. They learn safety measures in handling radioisotopes and familiarize with the various radioisotope tracer techniques and their role in biology.
		BTH 103P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2018	<ol style="list-style-type: none"> 1. Acquire the skill to perform experiments related to Biochemical preparations and advanced tools and techniques
		BTH 104P	Practicals related to Microbiology and Immunology	2018	<ol style="list-style-type: none"> 1. Obtain the skill to perform experiments related to Microbiology and Cell Biology
		BTH 105	Microbiology and Immunology	2018	<ol style="list-style-type: none"> 5. Acquire the knowledge on classification and structure of different microorganisms 6. Understand the microbial techniques for isolation, cultivation and maintenance of pure

					<p>cultures</p> <p>3. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
		BTH 106	Human values and Professional ethics-I	2018	1. Learn the importance of Human values and Professional ethics
		BTH 201	Enzymes and Intermediary Metabolism	2018	<p>1. Gain knowledge on different enzymes and their significance</p> <p>2. Correlate how the living organisms exchange energy and matter with the surroundings for their survival, and store free energy in the form of energy-rich compounds</p> <p>3. Recognize how the catabolic breakdown of the substances is associated with release of free energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways</p> <p>4. Apply the knowledge of metabolic pathways to biotechnological and biochemical research.</p>
		BTH 202	Molecular Biology	2018	<p>1. Understand the biochemical composition and genome organization in living cells</p> <p>2. Learn about the mechanism of tissue specific transcription and role of RNA polymerases</p> <p>3. Appreciate the correlation of genetic code with protein synthesis in prokaryotic and eukaryotic cells.</p> <p>4. Gain insights of mechanism of gene expression and regulations</p>
		BTH-203P	Practicals related to Enzymology & Molecular	2018	Learn the skill to perform experiments related to Enzymology and Molecular Biology

			Biology		
		BTH-204P	Practicals related to Biostatistics and Bioinformatics	2018	Learn the skill to perform experiments related to Immunology and analyze data using various biostatistical methods.
		BTH 205	Research Methodology, Biostatistics and Bioinformatics	2018	<ol style="list-style-type: none"> 4. Discuss the various steps involved in conducting research 5. Learn to apply hypothesis testing via some of the statistical distributions 6. Develop understanding about Biological data and database search tools 7. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
		BTH 206	Human values and Professional ethics-II	2018	Learn the importance of Human values and Professional ethics
		BTH 301	Genetic Engineering	2018	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes 2. Acquire knowledge on vectors for construction of genomic libraries and cDNA libraries 3. Understand the mechanism of cDNA synthesis 4. Know the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research.
		BTH-302	Cell and Tissue culture	2018	Gain the knowledge regarding plant and animal cell cultures. Get the skill to perform micropropagation.
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2018	Learn the skill to perform the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research
		BTH 304 a.	Bioprocess Engineering and	2018	<ol style="list-style-type: none"> 1. Handle the axenic cultures of industrially

			Technology		<p>important microbes and appreciate the relevance of microorganisms from industrial context.</p> <ol style="list-style-type: none"> Gain an overview on design, operations and types of fermentation systems Calculate yield and production rates in a biological production process, and also interpret data Apply knowledge on separation and purification of end products of fermentation
		BTH 304 b.	Legal, Ethical and Implications of Biotechnology	2018	<ol style="list-style-type: none"> Develop awareness on types IPR and patenting process Understand legal and ethical controversies in biotechnological innovations Apply knowledge in providing safety of food, water and environment Gain overview of GM crops and microbes and their impact on environment
		BTH 304 c.	Food and Industrial Biotechnology	2018	<ol style="list-style-type: none"> Acquire knowledge on food preservation, processing and control measures for food poisoning Establish indoor and outdoor cultivation units for algal cultivation Learn effective management of solid waste for energy production. Appreciate the industrial role of microorganisms in production of biomolecules
		BTH 305 a	Plant Tissue Culture	2018	<ol style="list-style-type: none"> Learn important milestones in the plant tissue culture and understand the concepts and

					<p>principles of Plant tissue culture.</p> <ol style="list-style-type: none"> Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somatic embryogenesis, synthetic seeds and applications. Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization.
		BTH 305 b	Bioethics	2018	<ol style="list-style-type: none"> Acquire the knowledge on IPR and procedures for patent filing Understand the Legal and Ethical aspects of gene therapy - cloning - Manipulation of human genome -Technology transfer. Learn role of Government, Industries and society in promoting, accepting and regulating the rDNA research Develop understanding on Environmental and Health aspects of Biotechnology
		BTH 305 c	Bioinformatics	2018	<ol style="list-style-type: none"> Develop understanding about Biological data and database search tools Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis Learn about pathway and enzyme databases, Sequence submission tools Develop understanding on protein folding and its significance
		BTH 401	Environmental	2018	<ol style="list-style-type: none"> Learn the relation between biotic and abiotic

			Biotechnology		<p>factors in different ecosystem models and predict how changes in free energy availability affect ecosystems.</p> <ol style="list-style-type: none"> 2. Appreciate the role of microorganisms in biodegradation and pollution detection 3. Develop skill on large scale production and applications of bio pesticides and bio fertilizers fin agriculture 4. Apply knowledge on solid waste management and reclamation of waste water
		BTH 402	Plant Biotechnology	2018	<ol style="list-style-type: none"> 1. Develop skill in production of transgenic plants resistant to biotic and abiotic stress 2. Apply knowledge for industrial production of plant metabolites 3. Cultivate the micro and macro algae of commercial importance on large scale 4. Identify different plant pathogens and apply biological control methods
		BTH 403	Project work	2018	<ol style="list-style-type: none"> 1. Select the appropriate research design and develop appropriate research hypothesis for a research project and acquire hands on training on various tools and techniques employed in executing the project.
		BTH 404 a	Pharmaceutical Biotechnology	2018	<ol style="list-style-type: none"> 1. Gain knowledge on preparation and formulations of different drugs 2. Develop skill on commercial production of pharmaceutical products for human welfare 3. Learn the techniques of drug validation and vaccine production 4. Understand the bioethical principle, values, concepts and social and judicial implications of

					pharmaceutical biotechnology
		BTH 404b	Animal Biotechnology	2018	<p>Understand the organization of reproductive organs and advances in contraception research</p> <p>2. Learn the techniques of In Vitro Fertilization and artificial insemination</p> <p>3. Develop skill in molecular techniques for production of transgenic animals</p> <p>4. Apply knowledge on molecular farming for production of vaccines and hormones</p>
		BTH 404c	Applications of Biotechnology	2018	<p>1.Acquire the knowledge on applications of plant, animal and environmental biotechnology</p> <p>2.Develop skill on organic farming and preparation of bio pesticides and bio fertilizers</p> <p>3.Establish and maintain cell lines for vaccine production</p> <p>4.Apply knowledge on waste management and recycling for environmental protection</p>
		BTH 404d	Practicals Related to Environmental Biotechnology & Plant	2018	1.Learn the techniques related to Environmental and Plant biotechnology
		BTH 405a	Tools in Biotechnology	2018	<p>1. Acquire the knowledge on analysis of DNA replication to map site specific points of replication</p> <p>2. Learn to apply DNA microarrays to detect replication origins</p> <p>3. Understand the functions of helicase and polymerase in DNA replication</p> <p>4. Acquire knowledge on sophisticated programmed of genome replication</p>
		BTH 405b	Immunology	2018	1. Out line, compare and contrast the key

					<p>mechanism of innate and adaptive immunity</p> <p>2. Apply knowledge in disease diagnosis through serological tests</p> <p>3. Develop skill in production of monoclonal antibodies</p> <p>4. Gain knowledge on undesirable immunological reactions and their complications in health management</p>
		BTH 405c	Applications of Biotechnology	2018	<p>1. Acquire the knowledge on applications of plant, animal and environmental biotechnology</p> <p>2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers</p> <p>3. Able to establish and maintain cell lines for vaccine production</p> <p>4. Apply knowledge on waste management and recycling for environmental protection</p>

32. Chemistry

Analytical Chemistry

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic ChemistryI	2018	<p>1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes.</p> <p>2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis</p>

				<p>and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules.</p> <ol style="list-style-type: none"> 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2.	CHE-102	Organic Chemistry I	2018	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereo controlled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3.	CHE-103	Physical Chemistry- I	2018	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation

				<p>and the postulates of Quantum Mechanics</p> <ol style="list-style-type: none"> 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
4.	CHE-104	Inorganic Practical- I	2018	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
5.	CHE-105	Organic Practical-I	2018	<ol style="list-style-type: none"> 1. .To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules.
6.	CHE-106	Physical Practical I	2018	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition,

				distribution coefficient, adsorption of different 2. To calibrate the statistical data
7.	CHE-107	General Chemistry-I	2018	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
8.	CHE-108	Human Values and Professional Ethics – I	2018	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct. 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
9.	CHE - 201	Inorganic Chemistry II	2018	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and

				<p>Farady methods</p> <p>4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reaction</p>
10.	CHE-202	Organic Chemistry II	2018	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
11.	CHE -203	Physical chemistry II	2018	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants.

				<ol style="list-style-type: none"> To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
12.	CHE 204	Inorganic Chemistry	2018	<ol style="list-style-type: none"> To separate and determine the two component mixtures. To acquire knowledge in the preparation of metal complexes
13.	CHE 106	Core practical II: Organic Chemistry	2018	<ol style="list-style-type: none"> To familiarize with binary mixture separation and to gain hands-on-experience in purification of the To get knowledge about the chemical behavior of different components and mechanisms
14.	CHE 206	Core practical II: Physical Chemistry	2018	<ol style="list-style-type: none"> To study the determination of cell constant and verification of Onsager equation, strength of strong To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
15.	CHE 207	General Chemistry II	2018	<ol style="list-style-type: none"> To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes To learn general principles and classifications of chromatographic separations and applications of TLC, GLC

16.	CHE 208	Human Values and professional ethics-II	2018	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
17.	CHE-AC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
18.	CHE AC 303 & 304	Core-Practical: Classical Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis 2. To gain knowledge on chemistry of alloys 3. To Understand the complexity, theory and

				<p>working principle of colourimetry</p> <p>4. To familiarize with laws of colorimetric titrations</p>
19.	CHE-AC-305A Chemistry III	Organic Chemistry III	2018	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
20.	CHE-AC-305B	Physical Chemistry III	2018	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy

				4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
21.	CHE AC 306	Spectral Techniques	2018	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
22.	CHE AC 306	Chromatographic Techniques	2018	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase.
23.	CHE-AC-401	Quality Control and General Principles	2018	<ol style="list-style-type: none"> 1. To diagnose problems in the quality improvement process and Explain each total quality implementation phase 2. To know about theoretical basis for the use of organic reagents in inorganic analysis. 3. To understand different types of kinetic methods and their evaluation and to determine the kinetics of enzyme 4. To understand the oxidation reactions with Ce

				(IV) sulphate solutions and applications of complexometric titrations
24.	CHE-AC 402	: Instrumental Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I₂ liberations and Ce⁴⁺ liberation in solutions
25.	CHE AC 403	Core practical I: Analytical Chemistry- Practical	2018	<ol style="list-style-type: none"> 1. Understand the common laboratory techniques including separation techniques 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. Gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures 4. Familiarize with interpretation of data to

				structures by NMR.
26.	CHE AC 404	Project Work	2018	<ol style="list-style-type: none"> 1. Perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour 3. Analysing and compiling the data and results in a chronological order in the form of dissertation. 4. Preparation of dissertation
27.	CHE-AC-405	Applied and Environmental Aspects	2018	<ol style="list-style-type: none"> 1. Have an idea about preparation of sampling, decomposition, separation and preconcentration of metal ions etc. 2. Gain experience on agrochemicals and fertilizers and their analysis 3. Have an idea on the analysis of fuels, alloys and explosives 4. Experience with environmental pollution monitoring techniques
28.	CHE-AC-406	Bioinorganic, Bioorganic, Biophysical Chemistry	2018	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
29.	CHE AC 406A	Drug Chemistry	2018	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs 3. Know the Analyzing about prostaglandins.

				4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
30.	CHE AC 406 B	Electroanalytical Techniques	2018	<ol style="list-style-type: none"> 1. Know how to interpret potentiometry and conductometry 2. Know the Interpretation of results while adhering to DC Polarography 3. Know the Analysing and compiling the data and results in polarography . 4. Familiarize Types of ion sensitive electrodes

M.Sc., Environmental Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry- I	2018	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.

CHE-102	Organic Chemistry I	2018	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
CHE-103	Physical Chemistry- I	2018	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics. 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2018	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that

				<p>are supported by the observations.</p> <ol style="list-style-type: none"> To familiarize with techniques of titration and calculation of errors
	CHE-105	Organic Practical-I	2018	<ol style="list-style-type: none"> To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
	CHE-106	Physical Practical I	2018	<ol style="list-style-type: none"> To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different To calibrate the statistical data
	CHE-107	General Chemistry-I	2018	<ol style="list-style-type: none"> To know about mean and median values, standard deviation and coefficient of variation To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
	CHE-108	Human Values and Professional Ethics - I	2018	<ol style="list-style-type: none"> To know about the needs and importance of professional ethics. To analyze nature of Values, basic Moral Concepts character and Conduct To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
	CHE-201	Inorganic Chemistry- II	2018	<ol style="list-style-type: none"> To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate

				<p>between Orgel diagrams and Tanabe-Sugano diagrams</p> <ol style="list-style-type: none"> To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry -II	2018	<ol style="list-style-type: none"> To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
	CHE-203	Physical Chemistry- II	2018	<ol style="list-style-type: none"> To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point

				<p>group (MLS, MHS and MSS) and orthogonality theorem</p> <p>4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2018	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures 2. To acquire knowledge in the preparation of metal complexes
	CHE-205	Organic Practical-II	2018	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms.
	CHE-206	Physical Practical -II	2018	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsagar equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
	CHE-207	General Chemistry-II	2018	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2018	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral

				<p>responsibilities of medical practitioners</p> <ol style="list-style-type: none"> To gain knowledge on social ethics and understand the characteristics of ethical problems in management. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-EC-301	Physical Chemistry III	2018	<ol style="list-style-type: none"> To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE-EC-302	Spectroscopy Applications	2018	<ol style="list-style-type: none"> To get experience to calculate λ_{max} values for dienes, enones, polyenes, aromatic and heteroaromatic compounds To familiarize with the absorption bands of the molecules with specific functional groups To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-EC-303	Water Analysis	2018	<ol style="list-style-type: none"> To get an idea about water analysis To understand the basic principles of soil analysis

				<ol style="list-style-type: none"> To familiarize with instrumentation of potentiometric techniques To gain knowledge on flame photometry and its applications
	CHE-EC-304	Instrumental Methods of Analysis-I	2018	<ol style="list-style-type: none"> To get an idea about water analysis To understand the basic principles of soil analysis To familiarize with instrumentation of potentiometric techniques To gain knowledge on flame photometry and its applications
	CHE-305	<p>(a) Organic Chemistry III</p> <p>(b) Inorganic Spectroscopy & Thermal Methods of Analysis</p> <p>(c) Green Chemistry</p>	2018	<p>305 A</p> <ol style="list-style-type: none"> To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds. <p>305 B</p> <ol style="list-style-type: none"> To know about TG and DTA and applications of different scanning calorimetry. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR

				<p>spectroscopy</p> <ol style="list-style-type: none"> To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
	CHE-306	(a) Spectral Techniques or (b) Chromatographic Techniques	2018	<p>306 A</p> <ol style="list-style-type: none"> To know the basic principles of spectroscopy To familiarize with the analysis of various functional groups by using different spectroscopic techniques. To Understand the applications of AAS. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups <p>306 B</p> <ol style="list-style-type: none"> To know the stationary and mobile phases in chromatographic techniques. To familiarize applications of different chromatographic methods To Understand the principle of chromatographic techniques To gain knowledge on the normal phase and reverse phase
	CHE-EC-401	Water pollution Monitoring and Environment laws	2018	<ol style="list-style-type: none"> Know about nuclear fission and fusion, uses of solar energy in space heating and water heating, hydropower and water heating, hydropower and production of ethanol from indirect solar energy. Learn physical and chemical properties of water and water complexation in natural and waste water and to understand about global warming, ozone depletion, green house effect and acid rains. Acquire knowledge on composition of inorganic and

				<p>organic contaminants in soil, soil corrosion and industrial applications of green chemistry.</p> <p>4. Get knowledge on various methods of solid waste collection and its disposal</p>
	CHE-EC-402	Air pollution, control Methods-Noise and Thermal pollution	2018	<ol style="list-style-type: none"> 1. Acquire knowledge on disease causing agents in water 2. Learn about the removal of suspended and dissolved solids present in waste water 3. Understand different uses of micro-organisms in environmental protection 4. Know different world life acts such as forest conversion act, water control pollution act and air prevention and control act
	CHE-EC-403	Instrumental Methods of analysis-II	2018	<ol style="list-style-type: none"> 1. To know the basic principles of conductometry and analysis of acids and halides. 2. Colorometric estimation of iron and manganese. 3. To have an idea about working principles of IR, AAS, Spectrofluorimetry, Gas chromatography and HPLC. 4. To familiarize with interpretation of data
	CHE-EC-404	Project work	2018	<ol style="list-style-type: none"> 1. To identify research problem, propose the hypothesis and to collect literature. 2. To perform research designs & experiments 3. To tabulate research result. 4. To conclude research outcomes in the form of dissertation
	CHE-405	<p>(a) Energy, Environment and Soils</p> <p>(b) <i>Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2018	<p>405 A</p> <ol style="list-style-type: none"> 1. Acquire knowledge on air pollutants, air pollution sampling measurements and analysis caused due to sulphur dioxide, carbon monoxide, nitrogen dioxide, oxidants, ozone, hydro carbons and particulate matter. 2. Learn about different control methods and adsorption of solids and liquids, gas analysis eluents viz., nitrogen oxides, carbon monoxide and hydrocarbons.

				<ol style="list-style-type: none"> 3. Understand pollution caused by vehicle emission, different industries, cement plants, steel mills and petroleum refineries. 4. Know about noise and thermal power project pollutions and their effect on human health. <p>405 B</p> <ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2018	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry. 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes.

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2018	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
	CHE-102	Organic Chemistry I	2018	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids

CHE-103	Physical Chemistry- I	2018	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2018	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations. 2. To familiarize with techniques of titration and calculation of errors
CHE-105	Organic Practical-I	2018	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
CHE-106	Physical Practical I	2018	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
CHE-107	General Chemistry-I	2018	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation.

				2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
CHE-108	Human Values and Professional Ethics – I	2018		<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
CHE-201	Inorganic Chemistry- II	2018		<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams. 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods. 4. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods.
CHE-202	Organic Chemistry -II	2018		<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered

				<p>heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents</p>
CHE-203	Physical Chemistry- II	2018	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems. 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system 	
CHE-204	Inorganic Practical- II	2018	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes 	
CHE-205	Organic Practical-II	2018	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms 	
CHE-206	Physical Practical -II	2018	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsagar equation, strength of strong 2. To get knowledge on the applications of 	

				conductometry, potentiometry, coulometry and pH metry
CHE-207	General Chemistry-II	2018	5. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 6. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC	
CHE-208	Human Values and Professional Ethics – II	2018	1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis	
CHE-IC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2018	1. To know about TG and DTA and applications of different scanning calorimetry 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy	
CHE-IC-302	Organic Spectroscopy and Applications	2018	1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds	

				<ol style="list-style-type: none"> 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-IC-303 and CHE-IC-304	Core practical I & II Inorganic Chemistry	2018	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To familiarize with the analysis of organometallic complex salts. 3. To Understand the complexity, theory and working principle of colourimetry. 4. To gain knowledge on analysis of organic components
	CHE-305A	Organic Chemistry III	2018	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete

				reductions to synthesize various compounds
	CHE-305B	Physical Chemistry III	2018	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE IC 306 A	Spectral Techniques	2018	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE IC 306 B	Chromatographic Techniques	2018	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase

	CHE-IC-401	Coordination compounds, Organo metallic chemistry & Chemistry of non-transition elements	2018	<ol style="list-style-type: none"> 1. To Gain an extensive knowledge about dinitrogen complexes of Ru(II), Os(II),Co(I), Mo(0)and dioxygen complexes of Ir(I) and Rh(I) and on cycloheptatriene and tropylium complexes of oxidative, reductive elimination reactions 2. To understand mechanism, stereochemical aspects and regeneration of catalyst in olefin hydrogenation (Wilkinson’s catalyst), olefin oxygenation (Wacker process or Smidt reaction), Olefin hydroformylation and Fischer –Tropsch process. 3. To study the examples of metal complexes having metal-metal single or multiple bonds and analyse the spectroscopic evidences for the presence of metal-metal bond. 4. To understand the synthesis and structures of boranes, carboranes, borazines, silicates carbides, peroxy compounds and inter halogens, pseudohalides
	CHE-IC-402	Instrumental Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis. 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I- and S2-)by using I2 liberations

				and Ce ⁴⁺ liberation in solutions
	CHE-IC-403	Instrumental Methods of Analysis-II	2018	<ol style="list-style-type: none"> 1. To understand the common laboratory techniques including separation techniques. 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. To gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures. 4. To Familiarize with interpretation of data to structures by NMR.
	CHE-IC-404	Project work	2018	<ol style="list-style-type: none"> 1. Ability to perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour. 3. Analysing and compiling the data and results in a chronological order in the form of dissertation 4. Preparation of dissertation.
	CHE-405	<p>(a) Solid state and Photo Chemistry</p> <p>(b) <i>Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2018	<p>405 A</p> <ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).

				<ol style="list-style-type: none"> 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions. <p>405 B</p> <ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2018	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs. <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography.

				4. Familiarize Types of ion sensitive electrodes
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M.Sc., Organic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2018	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule
	CHE-102	Organic Chemistry I	2018	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation

				products of terpenoids
CHE-103	Physical Chemistry- I	2018	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification 	
CHE-104	Inorganic Practical- I	2018	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors 	
CHE-105	Organic Practical-I	2018	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules 	
CHE-106	Physical Practical I	2018	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data 	

	CHE-107	General Chemistry-I	2018	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
	CHE-108	Human Values and Professional Ethics - I	2018	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics

	CHE-201	Inorganic Chemistry- II	2018	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods
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				4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry -II	2018	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
	CHE-203	Physical Chemistry- II	2018	<ol style="list-style-type: none"> 5. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 6. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants 7. To identify Relation between order of a finite group and its subgroup, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 8. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE-204	Inorganic Practical- II	2018	<ol style="list-style-type: none"> 3. To separate and determine the two component mixtures 4. To acquire knowledge in the preparation of metal complexes
	CHE-205	Organic Practical-II	2018	<ol style="list-style-type: none"> 3. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the

				4. To get knowledge about the chemical behavior of different components and mechanisms.
	CHE-206	Physical Practical -II	2018	3. To study the determination of cell constant and verification of Onsagar equation, strength of strong 4. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
	CHE-207	General Chemistry-II	2018	3. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 4. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2018	5. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 6. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 7. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 8. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-OC-301	Organic Chemistry III	2018	1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that

				causes selective and complete reductions to synthesize various compounds
	CHE-OC-302	Organic Spectroscopy and Applications	2018	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE OC 303 & 304	Core practical I: Organic Estimations - Practical	2018	<ol style="list-style-type: none"> 1. To gain knowledge about the estimation/percent purity of different organic molecules. 2. To get hands-on-experience with the synthesis and determination of concentrations and purity 3. To acquire knowledge in handling of toxic chemicals in multi step preparation of biologically important 4. To gain experience in the proposal of synthetic routes to functionalized derivatives
	CHE-OC-305 A	Inorganic Spectroscopy and Thermal Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To gain knowledge on chemistry of alloys. 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations.
	CHE-OC-305 B	Physical Chemistry III	2018	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and

				<p>Vibrational- rotational Raman spectroscopy.</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE OC 306 (A)	Spectral Techniques	2018	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE OC 306 (B)	Chromatographic Techniques	2018	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase.
	CHE-OC- 401	Organic synthesis I	2018	<ol style="list-style-type: none"> 1. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents 2. Learn about photolytic reactions of carbonyl compounds, conjugated carbonyl derivatives, olefins, conjugated dienes CO₃:To gain knowledge in the determination of allowed or forbidden of chemical reactions <i>viz.</i>, cycloaddition and 3. Learn the methods of preparation, properties, and industrial applications of various addition and condensation 4. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents
	CHE-OC 402	Organic Synthesis II	2018	<ol style="list-style-type: none"> 1. Familiarize with functionalization and interconversion of functional groups and the concept of organic synthesis by retrosynthetic approach 2. Gain knowledge in the formulation of synthetic routes for

				<p>naturally occurring drugs.</p> <ol style="list-style-type: none"> Understand quinoline, acridine and guanidine group of alkaloids as antimalarials and to familiarize with the role of functioning of broad spectrum antibiotics. Acquire knowledge about the classification, properties, structure & conformation and biological functions of peptides/proteins
	CHE OC 403	Core practical I: Spectral Identification of Organic Compounds	2018	<ol style="list-style-type: none"> Calculate λ max values. Ascertain functional groups. Interpret the spectral data to the structure and stereochemistry of the molecules. Analyse the fragmentation pattern of the molecules.
	CHE OC 404	Practical II: Project Work	2018	<ol style="list-style-type: none"> Identify the problem, to collect the literature and understanding parameters to design the problem. Perform experiments to synthesize the molecules with desired stereochemistry adopting modern techniques Collect and interpretation of the data to the structures Presentation of the data in the form of dissertation
	CHE-OC-405A	Heterocycles and Natural Products	2018	<ol style="list-style-type: none"> Familiarize with the synthetic routes of five membered heterocycles with two heteroatoms and to justify the site of Acquire knowledge on the synthetic methodologies of benzofused and six membered heterocycles and the effect of Familiarize with the structural elucidation and synthesis of naturally occurring steroids and hormones Know about isolation, structural determination and synthesis of flavonoids and isoflavonoids
	CHE-OC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2018	<ol style="list-style-type: none"> Gain knowledge on metallo proteins in electron transfer processes. Know the applications of trace metal ions and metal ions as chelating agents in medicine. Achieve and develop highly stereoselective

				<p>synthesis of organic compounds and drugs by adopting environmentally.</p> <p>4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters</p>	
	CHE 406A	OC	Drug Chemistry	2018	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
	CHE 406B	OC	Electroanalytical Techniques	2018	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Physical Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHE-101	INORGANIC CHEISTRY I	2018	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron

				<p>Transfer Reactions.</p> <p>4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.</p>
2	CHE-102	Organic Chemistry I	2018	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3	CHE 104	Core practical I: Inorganic Chemistry	2018	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors

4	CHE 105	Core practical I: Organic Chemistry	2018	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
5	CHE 106	Core practical I: Physical Chemistry	2018	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
6	CHE-107	General Chemistry I	2018	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
7	CHE 108	Human Values and Professional Ethics-I	2018	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavad Gita, various – 5. /*religions, religious tolerance, Gandhian ethic--

	CHE - 201	Inorganic Chemistry II	2018	<ol style="list-style-type: none">1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams3. To understand about the laws of Hunds, Curie

				<p>and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods</p> <p>4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions</p>
	CHE-202	Organic Chemistry II	2018	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents
	CHE -203	Physical chemistry II	2018	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry

				<p>point group (MLS, MHS and MSS) and orthogonality theorem</p> <p>4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE 204	Core practical I: Inorganic Chemistry	2018	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes
	CHE 205	Core practical II: Organic Chemistry	2018	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms
	CHE 206	Core practical II: Physical Chemistry	2018	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry
	CHE-207	General Chemistry II	2018	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE 208	Human Values and professional ethics-II	2018	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society.

				<ol style="list-style-type: none"> 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management 4. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-PC-301	Physical Chemistry III	2018	<ol style="list-style-type: none"> 1. To know the determination of Character Coordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE-PC 302	Organic Spectroscopy and Applications	2018	<ol style="list-style-type: none"> 1. To get experience to calculate λ_{max} values for dienes, enones, polyenes, aromatic and heteroaromatic compounds. 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided

				4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE PC 303 & 304	Core practical I: Physical Chemistry-practicals I & II	2018	<ol style="list-style-type: none"> 1. To study chemical kinetics of homogeneous solutions 2. To gain knowledge on the determination of different cations by flame photometry 3. To understand the principle and working aspects of conductometric titrations 4. To acquire knowledge on the implementation of colorometric estimations 5. To study chemical kinetics of homogeneous solutions
	CHE PC 305 A	Organic Chemistry III	2018	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
	CHE-PC- 305 B	Inorganic Spectroscopy and Thermal Methods of Analysis	2018	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation

				<p>and applications of ESR</p> <ol style="list-style-type: none"> To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron
	CHE PC 306 A	Spectral Techniques	2018	<ol style="list-style-type: none"> To know the basic principles of spectroscopy. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. To Understand the applications of AAS To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE PC 306 B	Chromatographic Techniques	2018	<ol style="list-style-type: none"> To know the stationary and mobile phases in chromatographic techniques. To familiarize applications of different chromatographic methods. To Understand the principle of chromatographic techniques To gain knowledge on the normal phase and reverse phase
	CHE-PC- 401	Electrochemistry	2018	<ol style="list-style-type: none"> Know the techniques of deposition of metals, throwing power simultaneous discharge of cations and methods of corrosion protection Learn about electrochemical Batteries, fuel cells and nickel-cadmium batteries Understand electrical double layer systems, sedimentation potential, null points of metals and zeta potential Calculate electrochemical parameters;

				familiarize mixed ligand systems and reversible systems
	CHE-PC 402	Thermodynamics, Polymers and Solid-state Chemistry	2018	<ol style="list-style-type: none"> 1. Derive Gibbs Duhem equation and to calculate fugacity and chemical potential 2. Calculate excess free energy and entropy, to draw Hildebrand curves and to correlate excess functions and activity coefficients 3. Learn morphology, T_m and T_g points and to calculate transition temperatures and to identify cross linking in polymers 4. Identify magnetic properties of solids, magnetic materials, superconductors and BCS theory
	CHE PC 403	Core practical I: Inorganic Chemistry - Practical	2018	<ol style="list-style-type: none"> 1. To perform titration of mixture of halides and to draw potentiometry curves 2. To learn amperometric titrations and mixtures by polarography 3. To Correlation of data obtained from IR, AAS, HPLC and GC 4. To Determination of alkalinity and purity by pH metry
	CHE PC 404	Project Work	2018	<ol style="list-style-type: none"> 1. To identify research problems and to collect research literature 2. To propose hypothesis of a research problem 3. To perform research experiments 4. To analyse the data and conclude the research outcomes
	CHE-PC-405A	Chemical Kinetics	2018	<ol style="list-style-type: none"> 1. Draw skrabal pH diagram and to separate unimolecular and bimolecular reactions 2. Study laws of photochemistry, to derive stern-volmer equation

				<ol style="list-style-type: none"> 3. Identify chromo potentiometry points and to investigate kinetic currents and isotopic effects 4. Learn photochemical thresholds, chemiluminescence
	CHE-PC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2018	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE PC 406A	Drug Chemistry	2018	<ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs 3. Analyzing about prostaglandins. Know the 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs
	CHE PC 406 B	Electroanalytical Techniques	2018	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

33. Environmental Sciences

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill
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				development
1	ENV-101	Ecology and Environment	2018	<ul style="list-style-type: none"> • Provide solutions to environmental problems using appropriate tools and techniques. • Develop both a quantitative and qualitative understanding of interactions between organisms and their consequences. • Gain the knowledge of functions of organisms and ecosystem.
2	ENV -102	Environmental Chemistry	2018	<ul style="list-style-type: none"> • Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water and soil. • Apply basic chemical concepts to analyze chemical processes involved in different environmental problems. • By knowing pollution levels in the environment best possible fresh environment can be created in different methods like afforestation, natural parks and sanctuaries etc., for human concern.
3	ENV-103P	Practical – I	2018	<ul style="list-style-type: none"> • Imparting practical knowledge about estimation of pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples.
4	ENV-104P	Practical-II	2018	<ul style="list-style-type: none"> • Understanding of various alkalinities present in the water sample by volumetric titration linked with theory. • By knowing water pollution potable water can be drawn out and wastewater can be treated. • By knowing various

				fertility of the soil can be known which is advantage to farmers for agriculture.
5	ENV-105	Environmental Toxicology and Public Health	2018	<ul style="list-style-type: none"> • To understand the role of toxicants in environment, methods used to quantify toxicity, regulations that govern toxic substances and assessment of risks posed by exposure to toxicants. • Inform, educate, and empower people about the potential hazards of toxic substances to environmental and human health. • By knowing the adverse health problems on human beings, safety, preventing measures can be implemented endemic and pandemic diseases can be controlled.
6.	ENV-106	Human Values and Professional Ethics-I	2018	<ul style="list-style-type: none"> • Describe the human values, understand the commitment and responsibility. • They gain the ability to bring harmony to the society. • By studying human values reformation of man and reformation of policy shall be done and harmony of environment and society also can be achieved.
8.	EN-201	Energy and Environment	2018	<ul style="list-style-type: none"> • Explain the key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences. • They explain basic competence regarding environmental impacts arising from different energy carriers and technical solutions. • Enrichment of ecosystem will be achieved.

8.	ENV-202	Environmental Pollution	2018	<ul style="list-style-type: none"> • Analyze sources of pollution, exposure pathways, fate and evaluate consequences of human exposure to pollution and its impacts to environmental quality. • Distinguish the effect of pollutants on human health, economy and wild environments. • Pollution free environment for human life will be achieved.
9.	ENV-203P	Practical-I	2018	<ul style="list-style-type: none"> • Describe the amount of pesticide/insecticide in water/vegetable samples. • To find concentration levels of toxicant by use of instrumental techniques • To estimate physicochemical assessments in different water samples
10.	ENV-204P	Practical-II	2018	<ul style="list-style-type: none"> • Identify the concentration of biochemical by using instrumental methods. • To find an amount of LC50 of various metals in organism. • To estimate the growth rate of fauna at various habitat condensations.
11	ENV-205	Instrumental Techniques and Applications	2018	<ul style="list-style-type: none"> • Integrate a fundamental understanding of the underlining physics principles as they relate to specific instrumentation used for atomic, molecular, and mass spectrometry, magnetic resonance spectrometry and chromatography. • Environmental potentiality will be achieved. This is indirect benefits to the society. • To understand the analysis and level of

				concentration of different metals through instrumental techniques.
12	ENV-206	Human Values and Professional Ethics-II	2018	<ul style="list-style-type: none"> • Understand the core values that shape the ethical behaviour. • An ability to apply their broad education towards the understanding of the impact of engineering solutions in a global and societal context. • Making the students to full man, understanding the ethical values.
13	ENV -301	Waste Treatment and Management	2018	<ul style="list-style-type: none"> • Describe the components of solid waste management and the laws governing it. • Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes. • Biodegradation of waste through natural and artificial methods will be achieved.
14	ENV -302	Environmental Assessment, Audit and Economics	2018	<ul style="list-style-type: none"> • Explain the concepts about the Environmental Impact Assessment (EIA) and describe the environment laws, aims and the necessity of EIA. • Critically examine assumptions inherent in impact assessment, examine a range of environmental impact assessments and identify and explore impact assessment fields and approaches. • Understand the sustainable development and controlling environmental pollution.
15	ENV -303	Practical-I	2018	<ul style="list-style-type: none"> • Understand the degradation of natural

				<p>resources by constructions of various projects.</p> <ul style="list-style-type: none"> • Understand requirement of oxygen for growth of organisms to break down organic matter in wastewaters. • Describe the low cost wastewater treatment practices in water demand areas.
16	ENV-304	Practical-II	2018	<ul style="list-style-type: none"> • It helps to explain the relationships between variables of the real-world applications. • Develop the programming techniques and the problem solving skills through programming.
18	ENV-305A	Ecotourism and Eco-restoration	2018	<ul style="list-style-type: none"> • Describe the challenging in Eco-Tourism and wildlife tourism. • Understand values of wildlife and minimizing impact on natural ecosystem due to tourism. • It is joyful to public and society; Government economy also will be generated. • Understand the mitigation approaches, their choices and alternatives.
18	ENV-305B	Biodiversity Conservation and Management	2018	<ul style="list-style-type: none"> • Systematically understand biodiversity and its vital role in ecosystem function. • Understand the value of biodiversity and current threats to biodiversity. • Describe Environment of nature
19	ENV-305C	Statistics, Computer Applications and Modeling	2018	<ul style="list-style-type: none"> • Analyze data using standard statistical techniques. • Utilize the Internet Web resources and evaluate on-line e-business system. • Environmental analysis, forecasting of the environment can be achieved.

20	ENV-306A	Natural Resources Conservation	2018	<ul style="list-style-type: none"> • Apply theories and methods with interdisciplinary approach towards natural resource management. • Critically examine the gap in the resource availability, use and conservation. • In conservation of the environment, employment can be generated.
21	ENV-306B	Global Environmental Issues	2018	<ul style="list-style-type: none"> • Predicting the consequences of human actions on the web of life, global economy and quality of human life. • Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and sustainable development. • International issues will be understood.
22	ENV-401	Water Resources and Watershed Management	2018	<ul style="list-style-type: none"> • Understand water's importance as a precious resource. • Provide a basic understanding of the impact of water and water-related issues in a global, economic, environmental and societal context. • Describe the management of water resources through construction of watersheds for future generations.
23	ENV-402	Remote Sensing and GIS	2018	<ul style="list-style-type: none"> • Building a foundation for understanding Remote Sensing and Geographic Information System (RS-GIS) as a powerful tool for

				<p>geospatial analysis.</p> <ul style="list-style-type: none"> • Appreciate the application of RS-GIS techniques to the matrices of environment and Resource management. • Future predictions of the environment will be known about weather, cyclones and research etc.,
24	ENV-403	Practical-I	2018	<ul style="list-style-type: none"> • Analyze the multi elements in various wastewater samples. • Understand the rain water harvesting practices. • Identify the water bodies and evaluate effective sensors and advance technique to extract and mapping the features for various applications.
25	ENV-404	Project Work and Comprehensive Viva-Voce	2018	<ul style="list-style-type: none"> • Understand project characteristics and various stages of a project. • Estimate and cost the human and physical resources required and make plans to obtain the necessary resources. • It helps to develop in contextualization of knowledge; critical thinking and can lead to new innovation ideas.
26	ENV-405 A	Disaster Mitigation and Management	2018	<ul style="list-style-type: none"> • Develop foundations for hazard, risk and vulnerability assessment. • To assess review and control the risk.
28	ENV-405 B	Environmental Laws, Policies and Legislation	2018	<ul style="list-style-type: none"> • Understanding judicial response to environmental issues in India. • Acquire the ability to evaluate the role of law and policy in conservation and management

				of natural resources and prevention of pollution.
28	ENV-405 C	Environmental Education	2018	<ul style="list-style-type: none"> • Demonstrate an integrative approach to environmental issues with a focus on sustainability. • Communicate complex environmental information to both technical and non-technical audiences. • Students will be enriched about the nature.
29	ENV-406 A	Forest Resources and Management	2018	<ul style="list-style-type: none"> • Demonstrate knowledge of forest vegetation modeling and the ability to forecast its development over time using models of forest growth. • Integrate knowledge of basic biology, physical sciences, forest and wildlife ecology, and social sciences into the stewardship of forest resources. • Through forest management national economy will be improved.
30	ENV-406 B	Environmental Management and Sustainable Development	2018	<ul style="list-style-type: none"> • Ability to analyze environmental management in relation to the major principles of sustainable development. • The ability to work effectively to create environmental management analysis outputs of professional quality, both independently and within team environments.

34. Fishery Sciences & Aquaculture

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	AQC 101	Concepts of Aquatic Ecology	2018	<p>i. Understanding the General Characteristics, Principles of classification, Aquatic EcologyCommunities.</p> <p>ii. To understand the various Physical and chemical characteristics of water.</p>
2	AQC 102	Systematics And External Anatomy of Cultivable Organisms	2018	<p>i. Understand the concepts of finfish and shellfish systematics and anatomy.</p> <p>ii.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	AQC 103 A	Fish Nutrition and Water Quality Management	2018	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in</p>

				<p>taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	AQC: 103 B	Environmental Monitoring and Bio deterioration	2018	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	AQC- 104A	Coastal Aquaculture	2018	<p>i.The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways</p>

				<p>associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	AQC 104 B	: Ornamental Fish Culture	2018	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2018	
7.	Practical-1 AQC 105	Identification and Morphology of Cultivable Organisms	2018	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They</p>

				<p>will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	Practical-2 AQC106	Fish Nutrition	2018	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular</p>

				<p>technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	AQC 107	Human Values and Professional Ethics – I	2018	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	AQC 201	Principles of Aquaculture	2018	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to</p>

				<p>the fullet.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	AQC 202	Physiology of Cultivable Organisms	2018	<p>i. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p> <p>ii. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>iii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	AQC 203A	Fresh Water Aquaculture	2018	<p>i. Student will know the values of ethics in various fields including medical, social and</p>

				<p>business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	AQC 203B	Capture fisheries	2018	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	AQC 204 A	Fishery Economics, Extension and Environmental Management	2018	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental</p>

				<p>problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	AQC 204 B	Limnology	2018	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>

16	Practical-1 AQC205	Soil and Water Characteristics	2018	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	Practical-2 AQC206	Physiology of Fin Fish and Shell Fish	2018	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly</p>

				operate a microtome.
18	AQC 206	Human Values and Professional Ethics – II (Audit course)	2018	<ul style="list-style-type: none"> i. Students gain knowledge about regulation of enzyme activity with respective mechanisms ii. To understand about mechanism of enzymes in clinical diagnosis and their applications iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.
19	AQC 301	Microbiology and Fish Pathology	2018	<ul style="list-style-type: none"> i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology. ii. Describe different methods of data handling using computer. iii. Perform basic operations of gene sequence retrieval and compare them using different software. iv. Perform basic operations of protein structure retrieval and comparison using different software. v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks. vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation. v. The course will aid in learning Test of

				significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.
20	AQC 302	Fish Immunology	2018	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	AQC: 303A	Cell Biology and Genetics	2018	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
22	AQC 303 B	Bioinformatics In Aquaculture	2018	i. Be able to access and analyse different case studies/examples of EIA in practice for

				<p>evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
23	Practical's AQC 304	Microbiology and Fish Diseases	2018	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p> <p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	Skill oriented course AQC 305	Fish Nutrition Technology	2018	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the</p>

				pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.
25	Open Elective (For other department students)	a)AQC 306A: Fish Processing Technology b) AQC306B: Pollution and Toxicology	2018	i. Learnt about structure, function and organization of Neurons in the Central nervous system ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials. iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny. iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effectively communicate with both specialist and non-specialist audiences/community.
26	AQC 401	Aquaculture Biotechnology	2018	i. Skill development in environmental and occupational Toxicology. ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain. iii. Identification of different routes of exposure of environmental toxins. iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning. v. To understand the overview of Animal Behavior and prominence of social organization

				<p>in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
27	AQC402	Essentials Of Biochemistry	2018	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>

28	AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2018	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
AQC403B	Aquaculture Engineering			
29	Practical's AQC 404	Biotechnology And Biochemical Estimations	2018	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	Multidisciplinary course/ project work AQC405	Project Work / Fieldwork	2018	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA</p>

				technology.
31	Open Elective (For other department students) AQC 406(A)	General Principles and Practices of Aquaculture	2018	<ul style="list-style-type: none"> i. Understand the evolution of protein structural motifs and domains and associate this with function; ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins. iii. Understand and explain enzyme mechanisms in a structural context. iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology. v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.
32	AQC 406 (B)	Fish Breeding and Hatchery Management	2018	<ul style="list-style-type: none"> i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections ii. Provides knowledge on the physiological mechanisms leading to diseased conditions. iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases. iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.

35. Geography

S. N	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1	GEG-101	Geomorphology	2018	<ul style="list-style-type: none"> • To understand the concept of place and how it is connected to people's sense of belonging to the physical environment, landscape and culture. • To understand the fundamental concepts of spatial interaction and diffusion, which explain how human activities are influenced by the concept of distance. • To exposed to the nature of physical systems such as geomorphologic processes and natural hazards. • To read and interpret information on different types of physical features maps. • To learn how human, physical and environmental components of the world interact.
2	GEG-102	Economic Resource Studies	2018	<ul style="list-style-type: none"> • To acquire knowledge about the concepts of resources, classification, models of natural resource processes, their use and misuse, conservation and management of resources for sustainable development • To Provide a comprehensive introduction to basic concepts and key theoretical approaches in economic geography • To Introduce economic geography as a dynamic, diverse and contested body of knowledge • To enable you to apply this knowledge to key social and economic issues in the context of economic globalization
3	GEG-103P	Maps Scales and Map Projections	2018	<ul style="list-style-type: none"> • To apprise the students about the art and science of map making and representation. • To explain the usage of different types of projections • To focus on the importance of scale and projection in the process of representing the earth's surface
4	GEG-104P	Terrain Mapping Techniques	2018	<ul style="list-style-type: none"> • To apprise the students about the Terrain mapping techniques • To project the representation of the landforms by using contour lines

				<ul style="list-style-type: none"> • To explain the methods of slope analysis • To develop the knowledge on the thematic maps • To Understand the data representation through the diagrammatic form and logographs
5	GEG-105	Advanced Cartography	2018	<ul style="list-style-type: none"> • To apprise the student to various aspects of cartography. • To introduce the basic concepts and key theoretical approaches in Advanced Cartography. <p>To describe the art and science of map making and map analysis</p>
6.	GEG-106	Human Values and Professional Ethics-I	2018	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society</p>
7.	GEG-201	Climatology and Oceanography	2018	<ul style="list-style-type: none"> • To introduce to the students the fundamentals of atmospheric phenomena, global climate systems and climate change. • The atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change. • To grasp the techniques for modeling the climate, covering both theoretical and technical aspects. • To understand the dynamics of the atmosphere and the overall climatological system. • To be able to analyse and interpret climatic data and classification of climate
8.	GEG-202	Principles of Remote Sensing	2018	<ul style="list-style-type: none"> • To focus on history and evolution of Remote sensing. • To explain the principle involved in remote sensing i.e. the Electromagnetic spectrum, reflection, refraction, diffusion, absorption and interaction

				<p>tion with earth's atmosphere.</p> <ul style="list-style-type: none"> • To give the technical knowledge of satellite system. • To provide knowledge on the platforms and instruments used for remote sensing. • To give light on Aerial Remote Sensing and satellite Remote Sensing. <p>To explain about the specification of sensors</p>
9.	GEG-203P	Interpretation of topographical and Weather Maps	2018	<ul style="list-style-type: none"> • To provide understanding and interpretation Skills of different Topographical maps. • To improve the knowledge on Indian weather maps and Interpretation skills.
10	GEG-204P	Techniques of Mapping and Map Analysis	2018	<ul style="list-style-type: none"> • To apprise the students about the Terrain mapping techniques • To project the representation of the land forms by using contour lines • To explain the methods of slope analysis • To develop the knowledge on the thematic maps
11	GEG-205	Geographical Thought	2018	<ul style="list-style-type: none"> • To acquaint the students with the Geographical philosophy and the Methodology and historical development of geography as a professional field. • The idea is to address the spirit and purpose of the changing geographies and to what was geographers contribute towards knowledge production. • To developing critical thinking and analytical approaches and Students will acquire an understanding of and appreciation for the contributions of the eminent geographers to the subject.
12	GEG-206	Human Values and Professional Ethics-II	2018	<p>Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p>

				<p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	GEG-301	Urban Studies	2018	<ul style="list-style-type: none"> • To deal with the concept of urban settlements and evolution of urban population and to provide concept of Urban studies. • To explain the cause and effects of growth in urban population. • To explain the theories involved in classification of towns and relationship between towns and cities and their population. • To understand patterns of World urbanization with reference to India
14	GEG-302	Geographical Information System(G.I.S)	2018	<ul style="list-style-type: none"> • To understand the evolution of GIS. • To focus on collection, analyzing, interpretation and presenting the data related to Earth. • To explain the types of data collection with respect to time and terrain and Database management and retrieving the data from different sources. • To provide the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS. • To provide knowledge on GIS applications in different sectors.
15	GEG-303P	Geographical Information System(G.I.S)	2018	<ul style="list-style-type: none"> • To acquaint knowledge about especially Geographic Information System(GIS) softwares. • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage. • To develop the skill on analysis methods of GIS.
16	GEG-304P	Statistical Techniques	2018	To analyze and represent the geographical data

17	GEG-305A	Agricultural Studies	2018	<ul style="list-style-type: none"> To focus on evolution of Agriculture through at the different ages and approaches. To understand the concepts and importance of determinants in different cropping patterns. <p>To understand agricultural allocation theories also the problem and prospects of Indian Agriculture</p>
18	GEG-305B	Regional Geography of India with special reference to Andhra Pradesh	2018	<ul style="list-style-type: none"> To develop the understanding about physical features of Indian Geography. To familiarize the students with physiography, Drainage, Climate, soil and natural vegetation of India.
19	GEG-305C	Disaster Management Studies	2018	<ul style="list-style-type: none"> To develop the skill of understanding about natural calamities and disaster and to realize the consequences as well as preparedness. To create awareness on human and natural disasters To understand classification of disasters and its impacts
20	GEG-306A	Regional Geography of Andhra Pradesh	2018	<ul style="list-style-type: none"> To acquaint the students with re-organization of Andhra Pradesh and its new physical, climate and drainage aspects.. To obtain the knowledge of demographic, irrigation and major crops. To understand Andhra Pradesh mineral and industrial aspects with transportation. To improve knowledge on the transportation and communication aspects of Andhra Pradesh
21	GEG-306B	Geographical information System(GIS) and Global Positioning System(GPS)	2018	<ul style="list-style-type: none"> To develop the skill of understanding GPS and Survey. To create awareness on post processing of GPS data and collection of data from GPS survey. To develop skill of report writing by using GPS data and software and hardware To acquaint knowledge about especially Geographic Information System(GIS) softwares.

		applications		<ul style="list-style-type: none"> • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage. • To develop the skill on analysis methods of GIS.
22	GEG-401	Regional Planning	2018	<ul style="list-style-type: none"> • To apprise the concept of Region and its planning. • To explain the types of regions and regional hierarchy. • To explain the types of regional planning and planning process. • To the people participation in planning process and role of Panchayat Raj system • To explain the resource based and physiographic based regional planning.
23	GEG-402	Advanced Remote Sensing	2018	<ul style="list-style-type: none"> • To give broad knowledge on photogrammetry, Principle, process, platforms and techniques and Aerial photographs. • To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques. • To understand the application of remote Sensing and Photogrammetry in various fields of study.
24	GEG-403P	Research Techniques	2018	<ul style="list-style-type: none"> • To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis. • To calculate and apply measures of location and measures of dispersion--grouped and ungrouped data cases. <p>To sensitize the different Research and agricultural techniques</p>
25	GEG-404P	Remote Sensing Applications	2018	<ul style="list-style-type: none"> • To explain practical knowledge on Remote sensing applications... • To help to understand Visual and digital interpretation of satellite Images. • To illustrate interpretation of Aerial photos. <p>To acquaint knowledge on allocation of RS in different fields and sectors</p>
26	GEG-405A	Water and Soil Resource	2018	<ul style="list-style-type: none"> • To apprise the student to various water resources related aspects and hydrological cycle.

		Management		<ul style="list-style-type: none"> To focus on groundwater and soil specifications. <p>To develop skill of water and soil management and to study on some case studies</p>
27	GEG-405B	Environmental Studies	2018	<ul style="list-style-type: none"> To create the environmental aptitude among students. To familiarize the students with concepts, issues, approaches about physical land To acquaint with contemporary environmental problems and challenges. <p>To provide knowledge on Ecosystem, Biomes, food chain and hydrological cycle</p>
28	GEG-405C	Geography for Research Extension and industry	2018	<ul style="list-style-type: none"> To explain the historical evolution, of research in Geographical studies. To help to understand about ethics, methods and factors in geographical research. To provide the knowledge about forms of research and design. To illustrate research methods and data collection. <p>To acquaint research analysis and report writing</p>
29	GEG-406A	Regional Geography of India	2018	<ul style="list-style-type: none"> To conceptualize the regional approaches and to examine regional differentiation in the study of Indian Geography. To expose to historical, economic, cultural, social and physical characteristics of India. <p>To provide an introduction to the regions of the India in terms of both their uniqueness and similarities</p>
30	GEG-406B	Remote sensing Principles and Applications	2018	<ul style="list-style-type: none"> To explain practical knowledge on Remote sensing applications... To help to understand Visual and digital interpretation of satellite Images. To illustrate interpretation of Aerial photos.

36. Geology

S. No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEO-101	Geomorphology and	2018	1) Able to explain conceptual approaches in geomorphology. 2) Able to describe land forms and land forming processes in different

		Paleontology		<p>climatezones and tectonic regimes.</p> <p>3) Able to explain different theories and models for landscape evolution.</p> <p>4) Obtain knowledge in recognizing and minimizing the mass wasting.</p> <p>5) Able to apply geomorphological concepts in economically important projects.</p> <p>6) <i>Palaeontology</i> is the study of prehistoric species, mostly ones that are extinct. It focuses primarily on fossil data, using a variety of physical, chemical and biological.</p> <p>7) Paleontology has essentially three basic goals: (1) to describe the world's past biodiversity; (2) to outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.</p>
2	GEO-102	Crystallography & Mineralogy	2018	<p>1) Students will be able to describe crystal structures, crystal symmetry and twinning</p> <p>2) Students will learn the use of X-ray crystallography to determine the arrangement Atoms in a crystal.</p> <p>3) Students will be able to identify the mineralogical composition of geological materials by studying some of the optical properties and techniques in order to reveal their origin and evolution.</p> <p>4) Students will get thorough knowledge about the physical chemical and optical Characteristics of minerals could lead to the discovery of new uses for Earth's mineral resources.</p>
3	GEO-103P	Crystallography & Mineralogy	2018	<p>1. The student understands the importance of minerals to society and to the study of the Earth.</p> <p>2. Can explain how the properties of chemical elements and their bonds regulate the structure and composition of minerals.</p> <p>3. Demonstrate how the crystal structure of minerals affects the external morphology and physical properties of a mineral (e.g. crystal symmetry, crystal habit).</p> <p>4. Identify various minerals using Physical properties.</p> <p>5. Identify various crystal forms shown by minerals belonging to different crystal system.</p>
4	GEO-	Geomorphology	2018	<p>1) The practical application of geomorphological science now forms river</p>

	104P	& Paleontology		<p>restoration and environmental protection.</p> <p>2) the extensive experience gained through field work, analysis and input to the design process to provide thorough understanding of geomorphology in the river environment and describe</p> <p>3) Paleontology is highly relevant to the modern and future world. We can learn how climate change has effected past organisms as well as how organisms have changed the physical world. We can also better understand the principles of extinction, evolutionary change, and biodiversity.</p> <p>4) Paleontological resources, or fossils, are any evidence of past life preserved in geologic context. They are a tangible connection to life, landscapes, and climates of the past. They show us how life, landscapes, and climate have changed over time and how living things responded to those changes.</p> <p>5) Paleontology lies between biology and geology since it focuses on the record of past life, but its main source of evidence is fossils in rocks.</p> <p>6) paleontology, also spelled paleontology, scientific study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.</p> <p>7) Body fossils and trace fossils are the principal types of evidence about ancient life, and geochemical evidence has helped to decipher the evolution of life.</p>
5	GEO-105	Stratigraphy & Paleontology	2018	<p>1) Students would have acquired comprehensive knowledge on principles of Stratigraphy, correlation methods classification of Stratigraphy units, tectonic framework of India and Geological timescale.</p> <p>2) Ability to give an account of various stratigraphic units and give stratigraphic column distribution in India, fossil content and economic importance of given geological formation.</p> <p>3) Apply standard stratigraphic codes while preparing geological reports</p> <p>4) Describe morphology, classification, evolutionary trends of Invertebrate fossils with geological and geographic distribution and paleoecological and paleo-environmental relevance.</p> <p>5) Ability to identify, classify and describe the morphology of the invertebrate fossils and plant fossils.</p> <p>6) Application of fossils in establishing the age of the rockunit, correlation with other area, and Use of fossil in finding mineral deposits.</p>

				7) Ability to apply micropalaeotological techniques in hydrocarbon exploration.
6.	GEO-106	Human Values & Professional Ethics-I	2018	<ol style="list-style-type: none"> 1) After completion of this course the students will be able to know the importance of Ethics and Human Values in various professions. 2) Students also will get in depth knowledge and understanding of moral values and ethical code of the Indian Society. Especially embedded in various scriptures.
7.	GEO-201	Structural Geology and Geotectonics	2018	<ol style="list-style-type: none"> 1) Able to demonstrate a basic understanding of stress, strain, rheology of earth's lithosphere and comprehend how to describe and classify brittle and ductile structures. 2) Able to describe, identify and analyze the folds, faults and joints and their effects on outcrop pattern. 3) Measure, plot and interpret structural field data and can relate these to geological Maps and knows how to read geological maps and geological cross-section. 4) Obtain knowledge of shear zone characteristics and textures which are usually highly, Mineralized zones.
8.	GEO-202	Remote Sensing and GIS	2018	<ol style="list-style-type: none"> 1) Develop knowledge in basics of Remote Sensing interpretation keys and applications. 2) Formulate the relationship between EMR and satellite Remote Sensing. 3) Application for Remote Sensing for important economic deposits. 4) Operate GIS data model and demonstrate GIS techniques for various applications. 5) Apply RS and GIS techniques to analyze the various geological materials.
9.	GEO-203P	Structural Geology & Sedimentology	2018	<ol style="list-style-type: none"> 1) The interpretation of geological maps and determination of strike and dip, Borehole problems and apparent dip, plunge and pitch of linear structures 2) Structural geology concepts and tools to understand rocks deformation in hot environments 3) Structural geology with interpretations and simple geomechanical problems and solutions

				<p>4) Structural geology issues related to new instruments in measuring structural data from rocks, paleomagnetic studies in tectonics field studies in structural geology interdisciplinary aspects of structural geology.</p> <p>5) Sedimentology encompasses the study of modern sediments such as sand, silt, and clay, and the processes that result in their formation (erosion and weathering), transport, deposition and diagenesis.</p> <p>6) Sedimentology, the study of sedimentary rocks and the processes by which they are formed, includes and is related to a large number of phenomena.</p> <p>7) Sedimentology includes the five fundamental processes defined by the term sedimentation --weathering, erosion, transportation, deposition and diagenesis.</p>
10.	GEO-204P	Remote Sensing and GIS	2018	<p>1. Understand the concepts of Photogrammetry and compute the heights of objects</p> <p>2. Understand the principles of aerial and satellite remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies.</p> <p>3. Understand the basic concept of GIS and its applications, know different types of data representation in GIS.</p> <p>4. Understand and Develop models for GIS spatial Analysis and will be able to know what the questions that GIS can answer are.</p> <p>5. Apply knowledge of GIS software and able to work with GIS software in various application fields.</p> <p>6. Illustrate spatial and non spatial data features in GIS and understand the map projections and coordinates systems.</p> <p>7. Apply knowledge of GIS and understand the integration of Remote Sensing and GIS.</p>
11	GEO-205	Sedimentology	2018	<p>1) Able to identify different sedimentary rocks in both hand specimens and thin section and derive information on the depositional conditions and environments.</p> <p>2) Able to study the sequence of sedimentary rock strata and describe the tectonic framework of sedimentation to understand the earth's history including palaeoclimatology and history of life</p>
12	GEO-206	Human Values & Professional	2018	<p>1) After completion of this course the students will be able to follow and practice good behaviour with human values and moral support to their elderly family</p>

		Ethics-II		<p>members.</p> <p>2) They also aware and get knowledge about medical ethics how the doctors will behave with patients, what type of ethics should be followed by business people. They also get in through knowledge about the protection of environment social ethics like family ethics, the role of print and electronic media in prevention and protection of Human rights in Indian society.</p>
13	GEO-301	Igneous Petrology	2018	<p>1) Acquire knowledge on the evolution of magma by different processes takes place from origin to emplacement with respect to different tectonic settings.</p> <p>2) Explain Igneous processes, formation, structures, classification and significance of texture in explaining rock history.</p> <p>3) Obtain knowledge on the crystallizing phase equilibrium of multi component magma system.</p> <p>4) Identify different Igneous rocks both in handspecimens and thin sections in terms of their petrogenesis by studying the petrographic characteristics.</p>
14	GEO-302	Metamorphic Petrology	2018	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p>
15	GEO-303P	Petrology	2018	<p>1) Describe the types and relative abundances of phases in a rock based on observations from hand specimens and thin sections</p> <p>2) Interpret the geologic history of igneous rocks based on mineral assemblage and textures using both hand sample and microscope techniques</p> <p>3) Use metamorphic mineral assemblages and textures to constrain deformation history and P-T conditions</p> <p>4) Use geochemical data (partition coefficients, REE plots, etc) to constrain petrogenetic processes</p> <p>5) Integrate their research findings with those of peers in developing a consensus model that (a) explains mineral occurrences and interplay (micro- and macroscopic) in field samples, and (b) holds up to public scrutiny (as a consensus model and as individual components) at a departmental mini-poster</p>

				<p>symposium</p> <p>6) Design and implement a field sampling campaign</p> <p>7) Use a portable X-Ray Fluorescence Spectrometer to collect elemental analyses</p> <p>8) Use MS Excel to organize, plot, and evaluate the petrogenesis of CRB using elemental data</p>
16	GEO-304P	Geochemistry	2018	<p>1) Geochemistry can play a key role in helping to protect the safety of drinking water by identifying the sources, concentration and forms of potentially harmful elements such as arsenic mercury and fluoride in natural water.</p> <p>2) Geochemistry and health establishes and explains links between the natural or disturbed chemical composition of the earth's surface and the health of plants animals and people.</p>
17	GEO-305	Geochemistry and Thermodynamics	2018	<ol style="list-style-type: none"> 1. 1) Understand the behavior of elements in a geochemical context and relate this knowledge to how elements redistribute within the Earth. 2. 2) Learn to interpret and explain interactions between Earth reservoirs. 3. 3) Understand and interpret the major processes that form and modify the Earth's crust and mantle. 4. 4) Use isotopes to trace geological processes and age date specific events.
18	GEO-306	Computer Applications and Geostatistics	2018	<ol style="list-style-type: none"> 1) Comprehend the database related to field geological data 2) Prepare and Interpret graphical and pictorial data 3) Exposure to some selected software's related to geology
19	GEO-307	Dimensional Stones and Building Materials	2018	<ol style="list-style-type: none"> 1) Explain the distribution of dimensional stones and occurrence of construction materials 2) Classify dimensional stones and construction materials 3) Assess the suitability of various dimensional stones and construction materials
20	GEO-308	Gemology	2018	<ol style="list-style-type: none"> 1) The course is focused on a comprehensive learning in gemology 2) Understands the formation, classification and properties to final the grading and evaluation.

				<p>3) Knowledge in order to identify original gemstones and stimulants</p> <p>4) Acquire skills which will be useful to them in gem industry</p>
21	GEO-309	Surveying and Field Geology	2018	<p>1) Understand the use of different surveying instruments, field equipment, aerial photographs and their use.</p> <p>2) Compute the area and earthwork for different works by using surveying instruments</p> <p>3) Analyze surveying techniques, tools, survey data and geological reports</p> <p>4) Prepare contour maps, geological maps and reports</p> <p>5) Solve survey issues using proper survey and interpretation.</p> <p>6) Use appropriate modern tools in surveying and mapping</p>
22	GEO-401	Economic Geology	2018	<p>1) Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p> <p>2) <i>Economic geology</i> is concerned with earth materials that can be used for economic and/or industrial purposes. These materials include precious and base...</p> <p>3) Scientific <u>discipline</u> concerned with the distribution of mineral deposits, the economic considerations involved in their recovery, and an <u>assessment</u> of the reserves available.</p> <p>4) Economic geology deals with metal ores, fossil fuels (<i>e.g.</i>, <u>petroleum</u>, <u>natural gas</u>, and coal), and other materials of commercial value, such as salt, gypsum, and building stone. It applies the principles and methods of various other fields of the geologic sciences, most notably <u>geophysics</u>, <u>structural geology</u>, and <u>Stratigraphy</u>. Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p>
23	GEO-402	Mineral Exploration,	2018	<p>1) This course linked to industry and acquires knowledge on techniques to locate ore bodies, methods for mineral exploration and geologic aspects of drilling.</p>

		Mining & Engineering Geology	7	<p>2) Acquire knowledge on geophysical methods for Ore reserve estimation.</p> <p>3) Acquire knowledge on Ore beneficiation processes and techniques.</p> <p>4) Confirm mining rules and regulations</p> <p>5) Able to determine the suitable mining methods</p> <p>6) Analyse different ores and ore beneficiation processes.</p> <p>7) Understand the different engineering properties of rock types and role of geologists in selecting the sites for different major engineering projects.</p>
24	GEO-403P	Economic Geology	2018	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p> <p>4) Acquire practical knowledge on microchemical techniques for identification ores and estimation of ore reserves.</p>
25	GEO-404P	Project Work	2018	<p>1) The geological formation of Kurnool district Devanakonda area are mainly Gulchervu quartzites, closepet granites intrusive dolerite dykes.</p> <p>2) The soils in the study area are mainly Red soils with patches of black cotton type and some patches of sandy and loamy type of soils are also found.</p> <p>3) Topographically the Q.L area is a hillock gently slopes towards the west direction. It is low lying plain land with an average altitude of 426m to 453m above the M.S.L.</p> <p>4) Watershed, a naturally entity in itself combines forest management, land use management and water management.</p>
26	GEO-405	Hydrogeology	2018	<p>1) Apply the knowledge of geological formations and the hydrological properties of rocks</p> <p>2) Analyze the suitability of water for domestic, irrigation and industrial</p>

				<p>purposes Conduct geological and geophysical investigations and give recommendations for drilling of borewells.</p> <p>3) Explain causes of pollution of groundwater give remedial measures to the society.</p> <p>4) Use modern methods and appropriate techniques to carrying out geophysical studies and artificial recharge methods</p> <p>5) Students will get critical knowledge on evaluation of geological condition at the major engineering project sites.</p>
27	GEO-406	Environmental Geology & Natural Hazards	2018	<p>1) Explain different aspects of environment and local, regional and global environmental problems.</p> <p>2) Classify and explain the environmental pollution and disaster control technologies</p> <p>3) Prepare, interpret and implement environment projects</p> <p>4) Identify the natural and environmental disasters, its causes and apply preventive measures.</p> <p>5) Adopt the laws and regulations towards hazard management</p> <p>6) Able to prepare controls of mitigating toward natural disasters.</p>
28	GEO-407	Water Shed Management	2018	<p>1) Explain the importance of watershed management</p> <p>2) Classify and explain the different water harvesting techniques</p> <p>3) Use modern tools for land erosion control</p> <p>4) Develop or improve the people's participatory approach for sustainable development and management of watersheds.</p>
29	GEO-408	Medical Geology	2018	<p>1) Explain about relationship of human Health and Geological Processes.</p> <p>2) Able to understand the importance of the Water quality standards and impact of micronutrient deficiencies in soils and crops on human health</p> <p>3) Analyse the interaction of abundance of elements and geological effects.</p>
30	GEO-409	Fuel Geology	2018	<p>1) The course offers a detailed study about natural fuels like coal and petroleum their formation and distribution especially in sedimentary basins.</p> <p>2) Student shall benefit to have basic ideas about formations, nomenclature in constitution of coal working detail of distribution of coals and coal industry in India, Sufficient idea of formation and entrapment of oil and gas.</p>

				3)Get elaborate knowledge about occurrence of atomic minerals in nature, methods of prospecting, atomic fuels and environment.
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37. Home Science

Food Science Nutrition & Dietetics

S. No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	FSND 101	Food Chemistry and Analysis	2018	<ul style="list-style-type: none"> I. Acquire knowledge on chemical composition physical, chemical, and functional properties of Water, carbohydrate, Protein and Fats. II. Understand the principles and working applications of different analytical techniques associated with food. III. Perform skills in qualitative and quantitative estimation of nutrients in different foods. IV. This course gives an hands on experience which will help student to become food analyst at local, regional, national and global levels.
2	FSND 102	Food Science and Experimental	2018	<ul style="list-style-type: none"> I. Acquire knowledge on Plant and Animal foods composition, and processing techniques on nutritive quality of foods. II. Understand the principles of cookery of different foods and methods of evaluation. III. This course is prerequisite for skill development in Food Product development. IV. Standardization and experimentation on different foods leading to physical, chemical and sensory changes can be understood leading to become food research analyst in industries at local, regional, national levels.

3	FSND 103	Clinical Nutrition and Dietetics-I Foods	2018	<ul style="list-style-type: none"> I. Understand the concepts of nutrition and its relation to health. II. Describe the role and responsibilities of Dietitian in Hospital. III. Apply Knowledge related to Therapeutic modification of diets and Plan and prepare diet for different diseases conditions. IV. This will help the students to get placements in hospitals and also start their own diet and nutrition clinics.
5	FSND 107	Essential of Food and Community Nutrition	2018	<ul style="list-style-type: none"> I. Understand about nutrients in food, their functions and consequences of deficiency. II. Apply skills for planning diets for nutritional disorders like PEM, Iron, Vitamin A and Iodine. III. Develop the knowledge of techniques to assess the nutritional status of different age groups. IV. Acquire knowledge on government programs to prevent nutritional disorders according to regional and national needs.
6	FSND 104	Food Chemistry and Analysis Practical	2018	<ul style="list-style-type: none"> I. Develop skills in quantitative and qualitative analysis of food.
7	FSND 105	Food Science and Experimental Foods Practical	2018	<ul style="list-style-type: none"> I. Apply skills in standardization of foods using different processing techniques. II. Acquire skills in processing, preparation and evaluation of bakery products.
8	FSND 106	Clinical Nutrition and Dietetics-I Practical	2018	<ul style="list-style-type: none"> I. Acquire hands on experience in Therapeutic modifications of diet for different diseases by planning, preparing and evaluating. II. Acquire community assessment skills in terms of anthropometry, dietary, clinical and biochemical for various disorders and planning programs for important days. III. Apply Computational skills in the Nutritional allowances during life span.
9	FSND 107	Human Values	2018	<ul style="list-style-type: none"> I. Define the term 'ethics' , 'good and bad values', crime and punishment and

		and Professional Ethics-I		<p>religioustolerance.</p> <p>II. Understand the importance of good character, conduct and values embedded in various religions.</p> <p>III. Apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room .</p> <p>IV. Demonstrate knowledge of ethical values in non-class room activities, internships and field work and resolve the moral issues. .</p>
10	FSND 201	Nutritional Bio chemistry	2018	<p>I. Understand the metabolism of nutrients such as carbohydrates, proteins, lipids, minerals and vitamins in human physiology.</p> <p>II. Acquire knowledge on factors affecting digestion, absorption of nutrients.</p> <p>III. Create awareness on enzymes and its role in nutrient metabolism.</p> <p>IV. Gain knowledge on role of vitamins and minerals as coenzymes in metabolism.</p>
11	FSND 202	Food Microbiology and Safety	2018	<p>I. Acquire knowledge about important genera of microorganisms associated with food.</p> <p>II. Acquaint with food contaminants and their sources.</p> <p>III. Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms.</p> <p>IV. Gain knowledge on the characteristics of food borne diseases, infections and intoxications and their identification.</p>
12	FSND 203	Clinical Nutrition and Dietetics-II	2018	<p>I. Understand the concepts of dietary principles for various diseases.</p> <p>II. Comprehend knowledge in Dietary modifications for the management of diseases.</p> <p>III. Application of principals in preparation and service of diets to the patients.</p> <p>IV. Able to assess the case studies and construct the diet charts.</p>
13	FSND 204	Nutritional Bio chemistry Practical	2018	<p>I. Develop skill and hands on experience in analysis of biochemical parameters in blood and serum.</p>
14	FSND 205	Food Microbiology and Safety Practical	2018	<p>I. Demonstrate and develop skills in the use of standard methods and procedures for the microbiological analysis of food</p>

15	FSND 206	Clinical Nutrition and Dietetics-II Practical	2018	<ol style="list-style-type: none"> I. Application of principals in preparation and service of diets to the patients. II. Able to assess the case studies and construct the diet charts.
16	FSND 207	Research Methodology	2018	<ol style="list-style-type: none"> I. Understand the concept of doing research about terms like 'variables', 'hypotheses, and 'research II. Gain knowledge on different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. III. Critically gain knowledge to select a sample by using different sampling methods like probability and non-probability sampling. IV. Develop a research proposal in the appropriate scientific style. V. Critically apply knowledge of application of statistics in data analysis. VI. Apply skills in using computer applications for data analysis
17	FSND 208	Human Values and Professional Ethics-II	2018	
18	FSND 301	Food Processing and Preservation Technology	2018	<ol style="list-style-type: none"> I. Understand the principles and scope of food processing and preservation. II. Get an overview on various techniques/methods in food processing and preservation. III. Acquire knowledge of emerging technologies and their applications in food processing and preservation. IV. Acquaint knowledge on advanced food preservation technologies.
19	FSND 302	Advances in Human Nutrition	2018	<ol style="list-style-type: none"> I. Appraise the advance concepts of nutrition of Brain, Immunity and Sports. II. Understand the concepts of dietary management in endemic nutrition problems. III. Create knowledge on the dietary management during emergencies. IV. Understand the process and relation of immunity and nutrition
20	FSND 303	Rural work experience	2018	This programme develops competency in the areas of technological, managerial and communication skills among the students. To develop communications skills in students using extension training methods through planning, preparing of Teaching

				Learning materials and providing education in the areas of Nutrition, Child development and transfer of technology.
21	FSND 304	Internship	2018	INTERNSHIP as dietitian in hospitals give practitioner skills for entry-level dietitians who are able to assume leadership roles to improve and maintain the nutritional care of diverse individuals, families and communities within national and global populations.
22	FSND 305-A	Nutrition Research techniques	2018	<ol style="list-style-type: none"> I. Understand the methods of nutritional status assessment. II. Knowledge on assessment techniques of protein quality in diets III. Comprehensive knowledge on research techniques using animal models. IV. Gain knowledge in nutrition research techniques using Human models.
23	FSND 305-B	Geriatric Nutrition	2018	<ol style="list-style-type: none"> I. Understand the physiological changes and theories of ageing. II. Knowledge on importance and consequences of diet in elderly. III. Awareness on degenerative diseases, life style genesis and its management through diet. IV. Describe the government programs and policies for elderly.
24	FSND 305-C	Nutrition in Emergencies And Disaster Management	2018	<ol style="list-style-type: none"> I. Understand and assess the emergency situations related to food and Nutrition in natural and manmade disasters. II. Acquire knowledge on nutrition surveillance and treatment in emergencies. III. Gain Knowledge on planning nutrition relief and rehabilitation in emergencies. IV. Develop skills in Nutritional epidemiological studies.
25	FSND306-A	Fundamentals of Food, Nutrition and Health	2018	<ol style="list-style-type: none"> I. Gain knowledge on foods, food groups, balanced diet for different age groups. II. Understand the importance of macro and micronutrients in daily diet. III. Comprehend knowledge on deficiency symptoms of different nutrients. IV. Develop skills and hands on experience to assess nutritional problems in community.
26	FSND306-B	Nutritional Assessment	2018	<ol style="list-style-type: none"> I. Learn the determinants of Nutritional Surveillance. II. Understand the direct and indirect methods of nutritional assessment. III. Knowledge on dietary assessment at individual and house hold level. IV. Identify the clinical symptoms and biochemical tests for different nutritional

				problems.
27	FSND 401	Food Safety Standards and Quality Control	2018	<ol style="list-style-type: none"> I. Understand the current food safety standards rules and regulations. II. Gain knowledge on desirable and undesirable constituents and contaminants in foods. III. Critical analysis on subjective and objective methods of quality of food. IV. Develop skills for quality analysis and assurance of food.
28	FSND 402	Food Product Development and Marketing	2018	<ol style="list-style-type: none"> I. Illustrate the new product categories in food market and their characteristics. II. Elucidate the process of new food product development in food industry. III. Exemplify various specialty food products and their applications. IV. Acquire the skill to design and development of new food product and analyze the quality of the product.
29	FSND 403	Nutrition for Health and Fitness	2018	<ol style="list-style-type: none"> I. Define the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. II. Understand the Energy metabolism pathways during physical activity. III. Describe the role of macronutrients in physical performance, weight management and obesity. IV. Explains the nutritional needs in different sports and the role of national agencies.
30	FSND 404	Food Safety Standards and Product Development Practical's	2018	<ol style="list-style-type: none"> I. Develop skills for quality analysis and assurance of food. II. Acquire the skill to design and development of new food product and analyze the quality of the product.
31	FSND 405 A	Institutional Food Service Management	2018	<ol style="list-style-type: none"> I. Understand the different types and management of food services. II. Illustrate the infra structure plans, menus and equipment in food service establishments. III. Know the food safety measures in food service establishments. IV. Knowledge on finance and personnel management.
32	FSND 405 C	Technology of Packaging(T+P)	2018	<ol style="list-style-type: none"> I. Provide knowledge on packaging and packaging materials II. An overview of the scientific and technical aspects of food packaging. III. Enable the students to understand the regulations of packaging and packaging material testing.

				IV. Apply skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life.
33	FSND 406-A	Child Growth and Development	2018	<p>I. Know the terms growth, development and stages of development across life span</p> <p>II. Understand the characteristics of children at different stages of childhood</p> <p>III. Explain the different developments like physical, cognitive , language and social development during childhood.</p> <p>IV. Apply knowledge to understand normal development and developmental delays during childhood.</p>
34	FSND 406-B	Disaster Management	2018	<p>I. Know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management.</p> <p>II. To understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters</p> <p>III. Explain the efforts made by the NGOs, Community based organizations and local administration in disaster management.</p> <p>IV. Discriminate disaster responses of Armed forces and Police.</p>

Human Development and Child Welfare

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HDCW-101	Advanced Study of Child Development	2018	Students acquire the knowledge of holistic development of individuals from conception to adolescent period. The students can disseminate the knowledge to teachers and parents regarding normal and delayed development among children. The students can apply skills when they serve as teachers at local level or as extension officers in national schemes like ICDS.
2.	HDCW-102	Community Nutrition	2018	Students acquire knowledge about food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local

				hospitals or in National programs like Zero budget natural forming , ICDS etc.
3.	HDCW-103	Trends in Early Childhood Education	2018	Students apply knowledge about appropriate approaches to teach pre- school children. They apply skills in the field of early childhood education, when they are placed as pre - school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
4.	HDCW-104	Practical-I Developmental Assessment Practical	2018	Students acquire skills on apply skills of observation of recording of all round development among infant and children below 5 years. They learnt how to assess cognitive ,physical, social &emotional development of children from late childhood to adolescent period, and life skills among adolescents.. The students can apply skills when they as teachers at local level or as extension officers in national schemes like ICDS.
5.	HDCW-105	Practical-II Community Nutrition Practical	2018	Students apply skills related to food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural forming , ICDS etc.
6.	HDCW-106	Practical-III Early Childhood Education Practical	2018	Students apply skills in the field of early childhood education, when they are placed as pre-school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
7.	HDCW-107	Family Dynamics	2018	Students get knowledge related to issues in family and society and understand laws related to marriage and family . Students utilize this knowledge when they work in national organizations like social welfare board ,and family counseling centers and in non-government organizations catering to the family welfare at local level like PASS ,RASS etc..
8.	HDCW-108	Human Values and Professional Ethics-I	2018	Students understand the importance of good character , conduct and values embedded in various religions . Demonstrate knowledge of ethical values in non-class room activities, internships and field work.
9.	HDCW-201	Quality Standards in ECE Centers	2018	Students get knowledge about planning activities for pre-school children .They understand different ways of teaching stories ,rhymes etc using different audio-visual aids.apply skills in planning a day's activities for pre -school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing

				pre- school education
10.	HDCW -202	Child Study Techniques	2018	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
11.	HDCW -203	Children with Developmental Challenges	2018	Students gain knowledge about the causes for various impairments and principles of assessment of children with disabilities and gifted children. The practical skills of management of special children were to be treated when they are placed as special educators in local schools ,colleges and at national Government organizations like NIMH,NIHH at national level and non government organizations at local level like Nava Jeevan center for Visually Challenged ,RASS,PASS etc.
12.	HDCW-204	Practical-I Participation in ECE Center Practical	2018	Students will be able to apply skills in planning a day's activities for pre -school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing pre- school education
13.	HDCW-205	Practical-II Child Study Techniques Practical	2018	Students apply skillsfor assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital
14.	HDCW-206	Practical-III Children with Developmental Challenges Practical	2018	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
15.	HDCW-207	Research Methodology	2018	Student gain knowledge about types of research ,different methods of sampling and preparation of schedules/questionnaires. The students get skills in preparation of a research proposal. The knowledge helps the students to write articles for journals at national and international levels.

16.	HDCW -208	Human Values of Professional Ethics - II	2018	Understand the importance of value education and ethics in medical ,business ,environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.
17.	HDCW -301	Parent Education	2018	The students gain knowledge about different child rearing practices and parenting styles adopted by parents. Gain skills in planning education materials for parents ,conduct parent education programs in schools and community, when they work as a teachers at local schools. It helps to disseminate the knowledge related to impact of parenting styles on child behavior to parents , teachers and significant others in the community.
18.	HDCW-302	Theories and Approaches to Child Guidance	2018	The students describe different theories related to child development and understand the reasons for maladaptive behavior. Apply the knowledge of theories to understand the behavior of individuals and also in counselling , when they join as counselors at local schools and mental health institutions at regional level like VIMHANS ,Vijayawada , at national level like NIMH ,Hyderabad and at local level Child Guidance clinics run by Government hospitals like SVRR hospital.
20.	HDCW-303	Practical -I Rural Work Experience	2018	Students develop an understanding of rural life situations and problems related to nutrition and child development relevant to real field situations through practical training. They gain knowledge and skills to impart education related to health and nutrition to the rural audience. This experience will helpful when they join rural development programs run by government like Health and Nutrition Natural Farming Fellow in Natural Farming Project.
21.	HDCW-304	Practical-II Internship	2018	Students get hands-on experience in real life work settings relevant to the human development like SODHANA, Vijayanagaram, Christian Counselling Centre ,Vellore ,Sudheesha Counselling Centre, Hyderabad, VIMHANS, Vijayawada.
22.	HDCW-305	Generic Elective* a)) Infant Development and Stimulation b Development of Learning Material	2018	(a)Students gain knowledge of stimulation activities for physical ,language ,cognitive and social development of infants. The knowledge and skills will help to plan stimulation activities for infants ,when they establish crèche as entrepreneurs or serve in Day care centers. (b) Students understand the importance and principles of teaching materials for young children. They gain skills in planning and development of material for al round development of children. The students can prepare teaching, learning materials when they

		and Children's Literature c) Planning For Project Management		join as teachers in pre - schools at local levels and as resource persons at national organizations like "Ajimpremji" Foundation. (c) Students gain knowledge in identification of problem for a research project, apply skills in selection of tools ,data collection and report writing .The knowledge helps the students to write articles for national and international levels and also to take up small projects.
24.	HDCW -401	Guidance and Counselling in Human Development	2018	The students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS ,PASS ,VIMHANS ,Vijayawada etc.
25.	HDCW -402	Advanced Human Development	2018	Students understand the characteristics and problems of early, middle and late adulthood persons. This knowledge helps when they get employment in Day care (or) foster care centers for elderly citizens (or) employment in Govt and ,local old age homes run by non govt organizations like RASS and PASS etc.
26.	HDCW -403	Rehabilitation and Management of Children with Special Needs	2018	Students understand the importance of Rehabilitation of children with developmental challenges through multi disciplinary approach. Gets practical knowledge about functioning of Govt and voluntary organizations that are managing children with developmental challenges .This helps students when they join as special educators at govt organizations like NIMH, Hyderabad and non govt organizations like RASS,PASS.
27.	HDCW-404	Practical Guidance and Counseling Practical	2018	The students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS , Vijayawada and local non government organizations like RASS ,PASS ,VIMHANS , Vijayawada etc.
28.	HDCW-405	Generic Elective* (a) Child and Human Rights or (b) Organization and Management of Child Welfare of	2018	(a) Students gain knowledge about human rights ,child rights and women rights. They can explains issues faced by women and children in difficult circumstances . The knowledge helps to understand the rights and problems of women and children when they work in Government organizations like Child Protection Officers. b).Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc.

		Institutions (c) Behavior problems and disorders among children		(c)The students recognize the systems of common behavior problem and disorders among children. They apply skill in management of problems and disorders through behavior modification techniques .These skills help the students when they work at local NGO like RASS, PASS and regional level like VIMHANS Vijayawada.
29.	HDCW-406	Open Elective* (For other departments) a) Child Welfare Programs or (b) Disaster management	2018	a). Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc. b).Students gain in-depth knowledge about natural disasters; manmade disasters; chemical hazards : disaster management. This helps to understand efforts made by the NGOs, Community based organizations and local administration in disaster management and also to help Government in times of disasters

Extension Management and Communication Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	EMCT-101	Extension Education in Community Development	2018	The students can gain understanding on the Extension Management community development and panchayat raj system to study the community by using PRA and various approaches of extension education. The students will get jobs as extension officers, and various placements in community development projects, as well as rural

				co-operative sector.
2	EMCT-102	Community Nutrition	2018	The students know about nutrients in food and know about the nutritional deficiencies and the community level problems and policies and programmes of Nutrition.
3	EMCT-103	Communication and Media Preparation	2018	The concept of Communication –Recent trends in Instructional technology: Extension literature and the role of different factors influencing and effecting communication process- Dyad setting small group and mass communication. This course will help the students to improve their communication skills.
4	EMCT-104	Extension Education in Community Development Practical	2018	The students will acquire skill to study the community by using PRA techniques and develop the skill of critical analysis on various approaches of extension education.
5	EMCT-105	Community Nutrition Practical	2018	Students gain practical knowledge on the role of nutrients in different stages of human life and methods of nutritional assessment and community level problems and policies.
6.	EMCT-106	Communication and Media Preparation Practical	2018	Students analyze the role of different factors influencing and effecting communication process, preparation and use of different teaching aids in teaching different groups of people and in different learning situations.
7.	EMCT-107	Dynamics of Rural Society	2018	The students will gain knowledge on social structure; characteristics of rural people; rural social problems - social institutions, learn the factors affecting social change and gain insight about the welfare policies and programmes for rural society.
8.	EMCT-108	Human Values and Professional Ethics-1	2018	Students will apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.

9.	EMCT-201	Entrepreneurial Development and Empowerment of Women	2018	Students acquire knowledge on Entrepreneurship, about the strategies for empowering women; rights of women and develop the entrepreneurship skills and learn about the institutional support of entrepreneurship. This course will help the students to become good entrepreneurs and also to start their own business enterprise.
10.	EMCT-202	Educational Technology	2018	The students gain knowledge on concept of teaching learning process; forms and levels of teaching and learning; curriculum design, development knowledge on genesis and trends in modern education. This will help the students to develop the curriculum and to choose their career in the teaching field.
11	EMCT-203	Community organization and Leadership	2018	Students will know about community organization, process of Community organization, rural institutions, leadership, analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth clubs; Role of Panchayat in developing rural women.
12	EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2018	Students will realize the role of entrepreneurship in economic development. Develop the skill of writing the business proposal and starting of business enterprise.
13	EMCT-205	Educational Technology Practical	2018	Students will develop the skill on developing a course curriculum; Preparation of lesson plans of selected topics and use of different instructional materials.
14	EMCT-206	Community Organization and Leadership Practical	2018	Students will develop the skill on different patterns of leadership, techniques of identification of leaders, and appraise the ongoing programmes in the locality.
15	EMCT-207	Research Methodology	2018	Students get knowledge on 'variables', 'hypothesis', research 'and recognize the purpose of doing a research, sampling methods and develop a research proposal in the appropriate scientific style.

16	EMCT-208	Human values and Professional Ethics-II	2018	Students gain knowledge on 'value education' 'self-introspection' and 'self-esteem develop well balanced personality, socially responsible persons of the society.
17	EMCT-301	Rural Development Administration	2018	Students gain insight about administration in Extension and rural development: coordination and supervision in rural development administration, the purpose and principles of administration; human relation in extension administration the recent ongoing rural development programmes etc. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
18	EMCT-302	Training and Development	2018	Students will learn the concept of training, goals of training; learning and types of learning, factors affecting learning among adult, current trends in training methodologies; training strategies and designs and acquire skills in developing; selection and use of different training methods- case study; role play; and brain storming; etc. This course will help the students to get jobs as Trainee- motivators, Trainers, consultants etc.
19	EMCT-303	Rural Work Experience	2018	Students will develop an understanding of rural life situations prevailing in villages with special reference to Home science among the student will know about socioeconomic conditions of people and their problems and several agencies and institutions involved in rural development.
20	EMCT-304	Internship	2018	students will gain first-hand exposure of working with NGOs. This will provide a practice-oriented and 'Hands-on' working experience in the NGOs / Government organizations and to enhance the students learning experience.
21	EMCT-305	(a)Managerial Skills for Extension Professionals	2018	Students will know about the conceptualization of management process and its major functions, managerial skill1; nature and importance for extension professionals. To understand the concept; scope and relevance of media in society; functions and future prospects of media systems

		<p>(b) Communication Technologies in Extension</p> <p>c) Sustainable Livelihood Systems</p>		<p>To understand the concept; scope and Communication technologies, relevance of media in society; functions and future prospects of media systems etc</p> <p>Students will know about the livelihoods of rural/urban people; resources – land, soil; climate; water and forests; processes and relationships among agro-climatic and natural resources, understand the production systems- farming and non-farming activities; their linkage with the livelihoods of rural people, food security; livelihood security, indicators of environmental sustainability.</p>
22	EMCT-306	<p>(a) Fundamentals of Food. Nutrition and Health</p> <p>(or)</p> <p>(b) Nutritional Assessment</p>	2018	<p>Students gain knowledge on foods, food groups, balanced diet for different age groups, understand the importance of macro and micronutrients in daily diet.</p> <p>Students will learn the determinants of nutritional surveillance; understand the direct and indirect methods of nutritional assessment. Gain knowledge on dietary assessment at individual and house hold level. Identify the clinical symptoms and biochemical tests for different nutritional problems.</p>
23	EMCT-401	Principles of Guidance and Counseling	2018	Develop knowledge about the concept; purpose; functions and role of guidance; types of services in a guidance programme , counseling and counseling theories, group guidance and counseling; concept; characteristics; Individual v/s group techniques. This course will help the students to get jobs as counselors and in Government and Non-government organizations, as counselors, consultant research co-coordinators etc
24	EMCT-402	Extension Programme Planning	2018	Students will get knowledge about Programme planning in Extension; Programme Implementation; Programme Evaluation, Documentation, Programme Planning; the

		and Evaluation		Preparation of plan of work ; Purpose, types and tools of Evaluation; Programme planning and implementation, documentation in Programme implementation. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
25	EMCT-403	Thesis/ Community Health Management	2018	Students gain knowledge about the concept of community health and global health; Primary Health Care – definitions; principles; components; comprehensive health care; levels of prevention, major health problems in India, management information systems in health, health needs of special groups – women, infants; and children; health of adolescents; geriatric health needs and problems.
26	EMCT-404	Principles of Guidance and Programme Planning Practical	2018	Assess the guidance programmes and counseling process in school and out of school settings and analyze use of standard test of study habits and attitudes (SSHA) for analyzing the study habits and attitudes.
27	EMCT-405	(a)Extension Management (b) Science & Technology for Rural Women	2018	Students will know about administration and management; process of management and organizational climate, understand the qualities and functions of extension personnel; Problems and issues of extension management in India. Analyze the management skills of extension personnel. Students will learn about the Science and Technology for rural development; Energy saving devices-application of solar energy; bio-gas etc., application of Science and Technology in Home science, safe water supply methods suitable for rural areas; health- hygiene and environmental sanitation. ,agencies involved in research and application of Science and Technology.

		(c) Environmental Management		Students will get the knowledge about the life and the environment; physical -chemical factors in the environment; changes in the environment; eco-system-earth, methods of waste management; women and environment government and non-governmental agencies in promoting better health, factors affecting changes in ecosystem and environment
28	EMCT-406	(a) Child Welfare Programmes or (b) Disaster Management	2018	<p>Students will learn concepts of ‘child’ and ‘child welfare’, enlist children in need of care and difficult circumstances, understand the role of government, child welfare programmes developmental and rehabilitative manner to the disadvantaged people in the society, monitoring and evaluation</p> <p>Students will get an insight about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management., global warming etc)efforts made by the NGOs, & Community based organizations and local administration in disaster management.</p>

Food Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	FT-101	Food Chemistry and Analysis	2018	<ul style="list-style-type: none"> - Students will acquire knowledge about physical, chemical, and functional properties of foods. - Learn the fundamental principles and working applications of different analytical techniques associated with food. - Students will be able to explore and perform skills in qualitative and quantitative estimation of nutrients in different foods.
2	FT-102	Food Science and Experimental Foods	2018	<ul style="list-style-type: none"> - Students will acquire knowledge on structure, composition and functional properties of plant and Animal foods. - Understand the principles of cookery of different foods and methods of

				<p>evaluation.</p> <ul style="list-style-type: none"> - Students will be able to apply the scientific method and quantitative techniques in standardisation of foods using different processing techniques.
3	FT-103	Cereal Grains, Legumes and Oilseed Technology	2018	<ul style="list-style-type: none"> - Students will gain knowledge on the structure and composition of cereal grains, pulses and oil seeds. - Understanding of the basic concepts of Post harvest technology, mechanism of equipments and processing of cereals, pulses and oilseeds - Know about various processing, milling process and evaluate Traditional and commercially processed foods with cereals, pulses and oilseeds
4	Practical-I	Food Chemistry and Analysis	2018	<ul style="list-style-type: none"> - The students will know about principles and working applications of different analytical techniques associated with food. - Perform skills in qualitative and quantitative estimation of nutrients in different foods.
5	Practical-II	Food Science and Experimental Foods	2018	<ul style="list-style-type: none"> - Comprehensive knowledge on techniques of analysing, evaluating and application of foods in different processing techniques in foods.
6.	Practical-III	Cereal Grains, Legumes and Oilseed Technology	2018	<ul style="list-style-type: none"> - The students will be able to explore knowledge on various processing techniques of cereals, legumes and oilseeds. - Students acquire knowledge in various food applications and product preparations.
7.	FT-104	Essentials of Food and Community Nutrition	2018	<ul style="list-style-type: none"> - Students gain knowledge about nutrients in food and their functions. - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups
8.	FT-105	Human Values and Professional Ethics - I	2018	<ul style="list-style-type: none"> - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. - Introducing different concepts of Bhagavad Gita and its applications in uplifting of values in the present society.
9.	FT-201	Technology of	2018	<ul style="list-style-type: none"> - Attain an overview on the classification composition and post-harvest

		Horticulture produce		<p>handling technologies of fruits and vegetables to reduce postharvest losses and their value addition.</p> <ul style="list-style-type: none"> - Impart the knowledge of processing, preservation and manufacture of fruits and vegetable based food products of fruits and vegetables. - Expertise in development of various Fruits & vegetables based products and assess the quality of fruit and vegetables and their products.
10.	FT-202	Food Microbiology and Safety	2018	<ul style="list-style-type: none"> - Obtain knowledge about important genera of microorganisms associated with food and food spoilages. - Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. - Demonstrate the use of standard methods and procedures for the microbiological analysis of food
11	FT-203	Dairy Technology	2018	<ul style="list-style-type: none"> - Impart the knowledge of milk grading , composition and technologies of processing of milk and milk products. - Provide in-depth knowledge in various unit operations and developments in dairy processing. - Demonstrate the manufacturing of various dairy products and exemplify the quality of dairy products.
12	Practical-I	Technology of Horticulture produce	2018	<ul style="list-style-type: none"> - Student will know about various fruit and vegetable processing techniques and attain practical knowledge in production and preparation of products
13	Practical-II	Food Microbiology and Safety	2018	<ul style="list-style-type: none"> - Acquire knowledge on laboratory techniques to identify microorganisms in food. - Demonstrate the various microbial estimations in foods by applying standard techniques.
14	Practical-III	Dairy Technology	2018	<ul style="list-style-type: none"> - Students acquire knowledge of grading, composition, quality evaluation and processing techniques of milk and milk products.
15	FT-204	Research Methodology	2018	<ul style="list-style-type: none"> - Awareness about terms like ‘variables’, ‘hypothesis’, research ‘and recognize the purpose of doing research. - Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. - Critically apply knowledge to select a sample by using different sampling

				methods like probability and non-probability sampling and development of research proposal.
16	FT-205	Human Values and Professional Ethics – II	2018	<ul style="list-style-type: none"> - Student will know the values of ethics in various fields including medical, social and business ethics. - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	FT-301	Food processing and Preservation Technology	2018	<ul style="list-style-type: none"> - Students able to understand the scope, principles and different methods of processing and preservation techniques. - Acquire knowledge of emerging technologies and their applications in food processing and preservation. - Understand the applications and limitations of food processing and preservation technology.
18	FT-302	Live Stock and Sea Food technology	2018	<ul style="list-style-type: none"> - Acquire knowledge of the structure, composition, nutritional quality of various, livestock and seafood. - Gain insight knowledge of slaughtering, carcass processing, processing methods used for processing meat poultry and fish. - Prepare various value-added products of egg, meat, poultry and sea foods.
19	Practical-I	Food Processing and Preservation Technology	2018	<ul style="list-style-type: none"> - Student acquires knowledge of emerging technologies and their applications in various processing techniques and products of various foods by processing and preservation methods.
20	Practical-II	In plant training	2018	<ul style="list-style-type: none"> - Provide hands on experience with regard to different areas in food industries. - Acquaint and gain knowledge related to production, unit operations, quality control and marketing aspects of food industry. - Emphasize the prominence of food plant sanitation, food safety, standards, laws and regulation in food industry.
21	FT -303(a)	a)Unit operations in Food Industry.	2018	<ul style="list-style-type: none"> - Important preliminary operations in food processing industries and understand the principle of Unit operation in food industry. - Impart knowledge on Safety, sanitation and Effluent Treatment in food industry. - Know the different pre and post processing operations as storage and

				packaging foods etc.
22	FT -303(b)	b) Spices, Condiments and Plantation Crops	2018	<ul style="list-style-type: none"> - Students acquire knowledge, identification and post-harvest technologies of various spices, condiments and plantation crops. - Illustrate various value added products of spices, condiments and plantation crops. - Perceive Standards, specifications, packaging and Quality control measures of spices, condiments and plantation crops.
23	FT -303(c)	c) Nutrition in Emergencies and Disaster	2018	<ul style="list-style-type: none"> - Explain concepts on Epidemiology and its application in planning programs during emergencies and emergency situations in natural and manmade disasters. - Gain knowledge on nutrition surveillance and treatment in emergencies. - Knowledge on planning nutrition relief and rehabilitation in emergencies.
24	FT -304(a)	(a) Fundamentals of Food, Nutrition and Health	2018	<ul style="list-style-type: none"> - Gain knowledge on foods, food groups, balanced diet and importance of macro and micronutrients for different age groups in daily diet. - Comprehend knowledge on deficiency symptoms of different nutrients. - Apply skills to assess on nutritional problems in community.
25	FT -304(b)	b) Nutritional Assessment	2018	<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups.
26	FT-401	Food Safety Standards and Quality Control	2018	<ul style="list-style-type: none"> - Gain knowledge in current rules and regulations of food safety standards and quality assurance. - Understand the insight quality evaluation of different foods by standard methods. - Develop skills for quality analysis and assurance of food quality.
27	FT-402	Food Product Development and Marketing	2018	<ul style="list-style-type: none"> - Elucidate the process of new food product development process to generate ideas, develop concept to test market and in food industry. - Acquire the skill to design and development of new food product and analyse the quality of the product. - Student able to design, demonstrate the skills in food process, organoleptic evaluation and nutritional label of food products as a team work.
28	FT-403	Nutrition for Health and Fitness/Project	2018	<ul style="list-style-type: none"> - Understand the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation.

		Work		<ul style="list-style-type: none"> - Describe the role of nutrients in physical performance, weight management, obesity and Energy metabolism pathways during physical activity. - Gain knowledge on concepts of physical activity, physical fitness and the importance of nutrients in Sports.
29	Practical-I	Food Safety standards and Product Development	2018	<ul style="list-style-type: none"> - Gain knowledge on subjective and objective evaluation methods of foods with safety and standards. - Exemplify various speciality food products and their applications, acquire the skill to design and development of new food product and analyse the quality of the product.
30	FT-404(a)	(a) Institutional food service management	2018	<ul style="list-style-type: none"> - Gain knowledge on principles of safe food preparation and cooking methods and service management
31	FT-404(b)	(b)Basic Food Engineering	2018	<ul style="list-style-type: none"> - Student understands the basic Principles, overview of processing techniques and methods of food. - Able to describe the types and properties of agro processing equipments like pasteurizer, spray drier and sealing equipments. - Enumerate processing equipments and maintenance of processing equipments
32	FT-404(c)	(c)Food Packaging	2018	<ul style="list-style-type: none"> - Enable the students to understand the regulations of packaging and packaging material testing. - Knowledge of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life. - Able to utilize some of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life.
33	FT- 405(a)	(a) Child Welfare Programmes	2018	<ul style="list-style-type: none"> - Understand the different developments like physical, cognitive, language and social development during childhood. - Apply knowledge to understand normal development and developmental delays during childhood.
34	FT- 405(b)	(b)Disaster Management	2018	<ul style="list-style-type: none"> - Understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters;.

				- Illustrate the efforts made by the NGOs, Community based organizations and local administration in disaster management.
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37. Mathematics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	MA 101	Algebra	2018	<ol style="list-style-type: none"> 1. Identify the concept of action and conjugation. 2. Analyze the maximal, prime, nilpotent and Nil ideals. 3. Understand U.F.D and Polynomial Rings. 	
2.	MA 102	Real Analysis	2018	<ol style="list-style-type: none"> 1. Understand the concepts of Riemann Stieltjes integration and Differentiation. 2. Understand Uniform Convergence and continuity. 3. Learn comparison tests at a and infinity. 	
3.	MA 103	Ordinary Differential Equations	2018	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 1. Learn boundary value problems, Eigen values and Eigen functions 2. Solve the second order linear questions. 	
4.	MA 104	Complex Analysis	2018	<ol style="list-style-type: none"> 1. Decide when and where a given function is analytic . 2. Understand the Mobius Transformation. 3. Describe basic properties of complex integration and having the ability to compute such integrals. 4. Understand Power series and expansion of analytic 	

5.	MA 105	Computer Oriented Numerical Methods	2018	<ol style="list-style-type: none"> 1. Apply numerical methods to obtain approximate solutions to mathematical problems. 2. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 3. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	
6.	MA 106	Human Values and Professional Ethics-I	2018	<ol style="list-style-type: none"> 1. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study. 2. Understand human values . 3. Develop character, affection and love towards other human beings. 4. Know the value of Four Noble Truths of Buddhism 	
7.	MA 201	Galois Theory	2018	<ol style="list-style-type: none"> 1. Apply the knowledge on polynomials solvable by radicals, Extension field. 2. Understand the normal and separable extensions. 3. Study the roots of polynomials specially quintic polynomials which is the cause to develop Galois theory. <p>Solve the problems on cyclotomic polynomials</p>	

8.	MA 202	Partial Differential Equations	2018	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Apply various methods to solve Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's</p>	
9.	MA 203	Topology	2018	<p>1. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis.</p> <p>2. Understand Topological Spaces, definition & examples.</p> <p>3. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics.</p> <p>4. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem.</p>	

10.	MA 204	Advanced Complex Analysis	2018	<ol style="list-style-type: none"> 1. To learn Laurent Series-Singular Points. 2. Explain the basic properties of complex integration and compute such integrals. 3. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 4. Understand the Infinite product and Partial Fraction Expansions. 	
11.	MA 205	Measure and Integration	2018	<ol style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	
12.	MA 206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 1. Understand the fundamental responsibilities and respect towards women 2. Know the value of education. 3. Question the illegal practices in the medical and business fields. 4. Understand the value of ecological balance and act in such a way which saves it. 5. Analyze the impact of media. 	

13.	MA 301	Commutative Algebra	2018	<p>To understand the ideals, Modules and operations on them.</p> <p>2.To learn the structures of composition series with ACC and DCC</p> <p>2. To study the theoretical properties of Noetherian rings</p>
14.	MA 302	Functional Analysis	2018	<ol style="list-style-type: none"> 1) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 2) Comprehend the Open mapping theorem and Closed graph theorem. 3) Construct orthonormal sets and conjugate spaces. 4) Understand the relevance of self-adjoint operators, normal, unitary operators and projections.
15.	MA 303	Classical Mechanics	2018	<ol style="list-style-type: none"> 1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 2) Derive the Lagrange's Equation from Hamilton's Principle. 3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action.

16.	MA 304	A) Differential Geometry B) Cryptography C) Linear Algebra D) Discrete Mathematics	2018	<ol style="list-style-type: none"> 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. <ol style="list-style-type: none"> 1) Understand various Cryptographic Techniques. 2) Apply various public key cryptography techniques. 3) Understand the various Security Applications. 4) Implement system level security applications. 5) Be familiar with secure random bit generator and linear feedback shift register sequences. 6) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 7) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. <p>Solve the system of linear equations</p> <ol style="list-style-type: none"> 2. Understand the concept of vector space, basis, dimension and linear Transformation 3. Explain the direct sum decompositions 4. Understand the Bilinear forms. <ol style="list-style-type: none"> 1. Use standard Normal Forms-Disjunctive-Conjunctive Principal Disjunctive 2. Discuss Inference Theory of the Predicate Calculus 	
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17.	MA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2018	<ol style="list-style-type: none"> 1. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 2. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 3. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 4. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
18.	MA 401	Number Theory	2018	<p>.</p> <ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 2. Understand the concepts of Limit, continuity & differentiation of functions. 3. Apply Integrals to find areas, length & volume of regions. 4. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

19.	MA 402	Banach Algebra	2018	<ol style="list-style-type: none"> 1. Understand different types of Banach Algebras with examples. 2. Know the essence of Gelfand mapping 3. Understand the Application of Commutative C*- algebras. 4. Derive the applications of Banach Algebra in analysis, Fourier series, Boolean Algebras and other significant areas of mathematics. 	
20.	MA 403	Graph Theory	2018	<ol style="list-style-type: none"> 1. Able to define basic concepts of graphs 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and 	
21.	MA 404	A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research	2018	<ol style="list-style-type: none"> 1. To learn the fundamental concepts of statistics and techniques required for data analysis. 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence 	

22.	MA 405	A) Theoretical Computer science B) Biomechanics	2018	<ol style="list-style-type: none"> 1) Know the Basic concepts of Metric spaces And Normed Linear space. 2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces. 3) Knows Bernstein's lethargy theorem and its practical and theoretical implications. 4) Be able to use and analyze the basic methods for polynomial approximations. 	
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APPLIED MATHEMATICS:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
23.	AMA101	METHODS OF APPLIED MATHEMATICS	2018	<ol style="list-style-type: none"> 1. Expand a function in a Fourier series and able to know under what conditions such an expansion is valid. 2. Aware of the connection between integral transforms (Fourier and Laplace) and be able to use the latter to solve mathematical problems relevant to the physical sciences. 3. Understand the applications of Sylow theorems. 4. Describe Unique Factorization and Euclidean Domains. 	
24.	AMA 102	Real Analysis	2018	<ol style="list-style-type: none"> 5. Understand the concepts of Riemann Stieltjes integration and Differentiation. 6. Understand Uniform Convergence and continuity. 7. Learn comparison tests at a and infinity. 	

25.	AMA 103	Ordinary Differential Equations	2018	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 5. Learn boundary value problems, Eigen values and Eigen functions 6. Solve the second order linear questions. 	
26.	AMA 104	Complex Analysis	2018	<ol style="list-style-type: none"> 5. Decide when and where a given function is analytic . 6. Understand the Mobius Transformation. 7. Describe basic properties of complex integration and having the ability to compute such integrals. 8. Understand Power series and expansion of analytic 	
27.	AMA 105	Computer Oriented Numerical Methods	2018	<ol style="list-style-type: none"> 4. Apply numerical methods to obtain approximate solutions to mathematical problems. 5. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 6. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	

28.	AMA 106	Human Values and Professional Ethics-I	2018	<p>5. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study.</p> <p>6. Understand human values .</p> <p>7. Develop character, affection and love towards other human beings.</p> <p>8. Know the value of Four Noble Truths of Buddhism</p>	
29.	AMA 202	Partial Differential Equations	2018	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Apply various methods to solve Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's</p>	

30.	AMA 203	Topology	2018	<ul style="list-style-type: none"> 5. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis. 6. Understand Topological Spaces, definition & examples. 7. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics. 8. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem. 	
31.	AMA 204	Advanced Complex Analysis	2018	<ul style="list-style-type: none"> 5. To learn Laurent Series-Singular Points. 6. Explain the basic properties of complex integration and compute such integrals. 7. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 8. Understand the Infinite product and Partial Fraction Expansions. 	
32.	AMA 205	Measure and Integration	2018	<ul style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	

33.	AMA 206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 6. Understand the fundamental responsibilities and respect towards women 7. Know the value of education. 8. Question the illegal practices in the medical and business fields. 9. Understand the value of ecological balance and act in such a way which saves it. 10. Analyze the impact of media. 	
34.	AMA301	CONTINUUM MECHANICS	2018	<ol style="list-style-type: none"> 1) Be able to describe motion, deformation and forces in a continuum. 2) Be able to derive equations of motion and conservation laws for a continuum. 3) Understand constitutive models for fluids and viscoelastic solids. 4) Formulate and solve specific technical problems of displacement, strain and stress. 5) Perform experiments with stresses and deformations. 6) Numerically model and analyse the stresses and deformations of simple geometries under an arbitrary load in both solids and liquids. 	

35.	AMA 302	Functional Analysis	2018	<ul style="list-style-type: none"> 5) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 6) Comprehend the Open mapping theorem and Closed graph theorem. 7) Construct orthonormal sets and conjugate spaces. 8) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. 	
36.	AMA 303	Classical Mechanics	2018	<ul style="list-style-type: none"> 5) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 6) Derive the Lagrange's Equation from Hamilton's Principle. 7) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 8) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action. 	

37.	AMA 304	A) Differential Geometry B) Cryptography C) Semi Group Theory D) Discrete Mathematics	2018	<ol style="list-style-type: none"> 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. <ol style="list-style-type: none"> 8) Understand various Cryptographic Techniques. 9) Apply various public key cryptography techniques. 10) Understand the various Security Applications. 11) Implement system level security applications. 12) Be familiar with secure random bit generator and linear feedback shift register sequences. 13) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 14) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. <ol style="list-style-type: none"> 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. <p>Solve the system of linear equations</p>	
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38.	AMA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2018	<ul style="list-style-type: none"> 9. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 10. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 11. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 12. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 13. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 14. Understand the concepts of Limit, continuity & differentiation of functions. 15. Apply Integrals to find areas, length & volume of regions. 16. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
39.	AMA 401	Number Theory	2018	<ul style="list-style-type: none"> . 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

40.	AMA402	FLUID DYNAMICS	2018	<ol style="list-style-type: none"> 1) Be familiar with continuum model of fluid flow and classify fluid/flows based on physical properties of a fluid/flow along with Eulerian and Lagrangian descriptions of fluid motion. 2) Derive and solve equation of continuity, equations of motion, vorticity equation, equation of moving boundary surface, pressure equation and equation of impulsive action for a moving inviscid fluid. 3) Understand Boundary layer Equations. 4) Solve Analytic Boundary layer equations .
41.	AMA 403	Graph Theory	2018	<p>Able to define basic concepts of graphs</p> <ol style="list-style-type: none"> 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and
42.	AMA 404	A) Mathematical Statistics B) Approximation Theory C)Algebraic Coding Theory D)Operations Research	2018	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <ol style="list-style-type: none"> 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence

43.	AMA 405	A) Theoretical Computer science B) Biomechanics	2018	<p>5) Know the Basic concepts of Metric spaces And Normed Linear space.</p> <p>6) Knows existence and uniqueness theorems for the best approximations in various Banach spaces.</p> <p>7) Knows Bernstein's lethargy theorem and its practical and theoretical implications.</p> <p>8) Be able to use and analyze the basic methods for polynomial approximations.</p>
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38. Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
MB-102	Enzymology & Microbial Physiology & Metabolism	2017	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
MB-105	Introductory Microbiology	2018	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
MB-106	Human Values and Professional Ethics – I	2018	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
MB-202	Medical Microbiology	2018	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
MB-204P	Practical – II Medical Microbiology	2018	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types.

			Be able to perform various staining procedures. Be able to identify blood cell types.
MB-205	Basics of Virology	2018	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plants viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
MB-206	Human Values and Professional Ethics –II	2018	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
MB 302	Recombinant DNA technology & Bioinformatics	2018	This course teaches rDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries. Student of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering
MB 305	b) food microbiology	2018	Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms.
MB-306	b) Industrial food Microbiology	2018	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts
MB 405b	Bioprocess engineering	2018	After completing this course, the student will be able to define a bacterium, a fungus, a virus and archaea, give examples of structurally different microbes, and list microbes by their energy metabolism and carbon sources. The student will be able to evaluate the cultivation, enrichment and growth prevention methods for microbes. The student will be able to explain the roles of microbes in elemental cycles on Earth and, the waste decontamination methods based on microbial activities. He/she will be able to judge how microbes and enzymes could be applied in industry.
MB-406a	Fermentation technology	2018	The course aims to provide fundamental insights to exploit microbes for manufacturing of products which have huge industrial significance. The course blends science and engineering with various biochemical processes to obtain products such as food, chemicals, vaccines, medicine. At the end of the course, the student will have a better appreciation for the role of microbes in industry using technology Able to design procedures, record research methodology and interpret the research
MB-406b	Pharmaceutical Microbiology	2018	This course prepares the students in appreciating the its benefits and applications in biotechnological, pharmaceutical, medical field.

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42. INDUSTRIAL MICROBIOLOGY:

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
IMB-102	Enzymology & Microbial Physiology & Metabolism	2018	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
IMB-105	Introductory Microbiology	2018	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
IMB-106	Human Values and Professional Ethics – I	2018	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
IMB-202	Medical Microbiology	2018	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
IMB-204P	Practical – II Medical Microbiology	2018	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures. Be able to identify blood cell types.
IMB-205	Basics of Virology	2018	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viralstudy. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plants viruses as:single strained RNA (SS RNA), double strained RNA(DS RNA); single strained DNA (SS DNA) and double strained DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Calciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
IMB-206	Human Values and Professional Ethics –II	2018	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
IMB 305	b) Bioprocess	2018	Give elaborate knowledge on Health care products.

	Engineering and Technology		Provide in depth knowledge about microbial antibodies and recombinant products. Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.
IMB-306	a) Industrial Biotechnology	2018	Be able to gain knowledge on strain improvement. Be able understand the whole broth processing. Gain knowledge on production of industrial products
	b)Immuno Technology and Human Health	2018	Immunology and Human Health is designed to advance your understanding of the Immune system and to apply this knowledge to basic immunological research of human diseases. The immune system is composed of numerous cells and molecules that act in concert to maintain health, to overcome infection, prevent tumour growth and repair damaged tissues. The study of the immune system provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (bacteria, viruses, protozoans and fungi). This subject provides a greater understanding of the complexity of the immune system and its responses to stresses such as infection. It demonstrates how modulation, or activation, of the immune system can either help overcome infection or may lead to autoimmune disease. Understanding the immune system gives us the potential to develop therapies to control events such as infection or autoimmune conditions. This subject helps students expand their understanding of current concepts in immunology and the potential application of applied immunology in medicine, research and industry.
IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2018	Able to design procedures, record research methodology and interpret the research Able to design procedures, record research methodology and interpret the research
IMB-405	a) Biostatistics & Bioinformatics	2018	Be able to gain knowledge on basic concepts in statistics. Be able to design the experimental and statistical basics of biological assays. Be able to give familiarize with microbial genomes Be able to acquaint themselves with metagenomics Be able to learn basics of protein identification method Be able to gain knowledge on drug discovery
IMB-406	a) Microbes in Human Welfare	2018	Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.
	b) Medical and Diagnostic Microbiology	2018	Describe the aetiologies, epidemiology and basic mechanisms of pathogenesis of infectious diseases. Describe the basic principles of diagnosis, antimicrobial treatment, prevention and control of infectious diseases in the hospital and community. Describe the host immune system and explain the host response to infection Understand and interpret basic laboratory tests for the diagnosis of infectious diseases. Apply the principles of molecular and immunological techniques for the diagnosis of infectious diseases. Analyze and solve case studies involving bacterial and fungal agents

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40. Physics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
	PHY 101	Classical Mechanics and Theory of Relativity	2018	<ol style="list-style-type: none"> 1. Formulate the Lagrangian and Hamiltonian mechanics concepts, solve the related problems 2. Learn the concepts of Poisson brackets, Hamilton-Jacobi equations and action angle variables. 3. Understand the Kepler's laws, Rutherford scattering, Euler's equations and solve the related problems 4. Learn the theory of relativity and its applications. 	
	PHY 102	Atomic and Molecular Physics	2018	<ol style="list-style-type: none"> 1. Understand the various basic concepts of atomic and molecular physics and know the analysis of different molecular spectra and then get the structural details. 2. Learn the concepts and importance of Zeeman effect, Stark effect and Paschen back effect 3. Understand the importance of rotational, vibrational and electronic spectra 4. Learn the various applications of atomic and molecular spectroscopy in different fields. 	

	PHY 103	Solid State Physics	2018	<ol style="list-style-type: none"> 1. Understand different bonds in solids, importance of lattice vibrations, their models and elastic properties 2. Explain electronic properties of solids in classical, quantum and the nearly free electron model. 3. Able to classify materials as metals, insulators and semiconductors and sketch the band diagram for each 4. Learn Hall effect and Heyness-Schockley experiment and their uses, properties, theories and applications of superconductors. 	
	PHY 104	Analog and Digital Electronics	2018	<ol style="list-style-type: none"> 1. Understand the design and working of BJT/FET/ MOSFETs based electronic circuits 2. Observe the effect of negative feedback on amplifier parameters, types of negative feedback topologies. Perceive the effect of positive feedback on working of Op-Amps based Oscillators. 3. Learn and understand the basics of digital electronics, Boolean algebra, and be able to design the simple logic circuits and test/verify the functionality of the logic circuits. 4. Develop the skill to build, and troubleshoot analog and digital electronic circuits. 	
	PHY 105	General Physics lab. - I	2018	<ol style="list-style-type: none"> 1. Determining the value of Planck's constant and Seebeck coefficient of a thermocouple, and also measurement and behavior analysis of semiconductor, laser, thermistor and white light dispersion. 2. Structural determination using X-ray diffraction method. 3. Learn the applications of lasers 4. Able to develop skills related to the said experiments in Physics. 	
	PHY 106	Electronics lab. - I	2018	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Set up testing strategies and select proper instruments to evaluate the performance characteristics of the electronic circuit. 3. Able to learn the applications of operational amplifiers 4. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 	

PHY 201	Statistical Mechanics	2018	<ol style="list-style-type: none"> 1. Learn different ensembles and partition functions and their applications to thermal properties of solids 2. Understand the concept of partition functions and its applications 3. Understand the concepts of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distributions. 4. Disseminate the applications of Maxwell's distribution of velocities and various applications of systems behaving as ideal ideal Bose gas or Fermi gas.
PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2018	<ol style="list-style-type: none"> 1. Understand the laws related to electrostatics and magnetostatics 2. Learn about light propagation in various materials and understood properties of lasers and applications 3. Know holographic concept, use of Fourier transforms in optics 4. Learn the basics and construction of optical fibre and optical fibre applications
PHY 203	Mathematical Physics	2018	<ol style="list-style-type: none"> 1. Understand and apply the mathematical skills to solve quantitative problems in physics. 2. Apply Laplace and Fourier transforms in solving different problems of mechanics, electronics etc. 3. Solve different physical problems using numerical techniques 4. Understand complex variables and applications
PHY 204	Nuclear Physics and Analytical Techniques	2018	<ol style="list-style-type: none"> 1. know the concepts of nuclear reactions and their usefulness in nuclear reactors. 2. Learn the classification of elementary particles and its properties 3. apply the various analytical techniques in getting structural details of unknown compounds 4. understand the various advanced spectroscopic techniques and microscopic techniques

	PHY 205	General Physics lab. - II	2018	<ol style="list-style-type: none"> 1. Using lasers ins slit width calculation and refractive index measurement, 2. Understand phenomenon of interference through Young's modulus experiment 3. Intensity variation of light, photo transistor working, absorption and decay of nuclear adiation 4. Analyse the results and able to design the instruments 	
	PHY 206	Electronics lab. - II	2018	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 3. Under the architecture and working of 8085 microprocessor 4. Practice different types of wiring and instruments connections keeping in mind technical, Economical, safety issues. 	
	PHY 301	Quantum Mechanics – I	2018	<ol style="list-style-type: none"> 1. Solve problems in quantum mechanics using Schrodinger's equation and Dirac representation. 2. Grasp the concepts of different pictures and familiar with the applications 3. Know how the approximation methods applied to atomic, nuclear and solid-state physics. 4. Understand scattering theory, formulate and solve scattering equation- solve problems using this theory 	
	PHY 302	Physics of semiconductor devices	2018	<ol style="list-style-type: none"> 1. Classify different diodes and its importance in different applications 2. Gain theoretical knowledge on devices formation and able to fabricate devices 	

PHY 303	Specialization: A) Applied Spectroscopy-I B) Condensed Matter Physics-I C) Electronics-embedded systems	2018	1.Understand the molecular structure and importance of various molecular transition 2.know the rotational, vibrational and Raman spectroscopy of molecules and their various applications 3.Understand the concepts and instrumentation in different spectroscopic techniques 4.Learn about fluorescence and phosphorescence spectroscopy and their applications. 1. Learn the classification of growth techniques and its importance, able to analyze the defects and its importance in properties of solids, gain knowledge on defects importance in growth of crystals 2. Explain various magnetic phenomena and describe the different types of magnetic ordering based on the exchange interaction, and magnons and their importance 3.Understand different dielectric properties, differentiate between ferroelectric, anti-ferroelectric, piezoelectric and pyroelectric materials. 4.Learn excitons, photoconductivity, types of luminescence, decay mechanisms 1. Acquire knowledge about PIC microcontrollers embedded processors and their applications. 2. Develop programs for data transfer, arithmetic, logical and I/O port operations. 3. Develop program for PIC microcontroller timers, serial port and Interrupts using “C”. 4. Interface LCD, keyboard, ADC, DAC, sensors, relays, DC and stepper motor with PIC microcontroller.	
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	PHY 304	Elective: A) Photonics- I B) Solar Energy-Thermal Aspects C) Vacuum and Thin Film Technology	2018	<ol style="list-style-type: none"> 1. Understand the fundamental properties of lasers and laser systems 2. Know about the different optoelectronic devices and their behaviour 3. Aware of wide variety of applications of opto-electronic components. 4. Learn different modulations of light <ol style="list-style-type: none"> 1. Understand the fundamentals of solar energy, particularly the thermal energy component. 2. Acquire knowledge on solar radiation measurement techniques and procedures. 3. Demonstrate skills related collector performance analysis through hands on experience 4. Learn the working of different solar thermal energy systems <ol style="list-style-type: none"> 1. Learn production of vacuum and working of various pumps and gauges, design of vacuum system and detection of leak in system. 2. Basic concepts in preparing thin films, outline the conditions for deposition of amorphous, crystalline and epitaxial films. 3. Understand the thin film growth mechanism 4. Understand the working of thickness measurement instruments 	
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	PHY 305	Specialization-Lab.	2018	<ol style="list-style-type: none"> 1. Gain experience with some statistics to analyse data in laboratory. 2. Handle the spectrophotometers and could analyse the data. 3. Understand Zeeman effect practically 1. Identify the compounds based on qualitative analysis 1. Minority charge carrier current in calculation of band gap 2. Analysis of magnetic materials in terms of coercivity and saturation magnetization, 3. Creep importance in materials characteristics analysis 4. Transition temperature determination by finding dielectric constant, calculation of dispersion frequency of mono and diatomic lattices through electrical analog 1. Define the arithmetical and logical assembly language for microcontroller PIC 16F877A 2. Know the downloading procedure on hardware into flash ROM of PIC 16F877A 3. Show the testing data on a defined port wish board. 4. Competent to evaluate the data transfer response of PIC 16F877A. 	
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PHY 306	Elective - Lab	2018	<ol style="list-style-type: none"> 1. Demonstrate both the theory and experiments related to propagation and modulation of light 2. Learn the optical fibre working 3. Design the Hologram 4. Propose and design new experiments based on the verification of theory with available optical components 1. Demonstrate the skills related to measurement of direct, diffuse and global solar radiation. 2. Understand the working of a solar cell and its efficiency measurement 3. Verify the influence of different parameters on the solar cell efficiency 4. Design a solar module for a specific output current and voltage ratings. 1. Understand the working of rotary and diffusion pumps 2. Band gap determination of semiconductor thinfilm 3. Working of solar cell 4. Demonstrate the skill acquired in connection with thin film and device characterization 	
PHY 401	Quantum Mechanics - II	2018	<ol style="list-style-type: none"> 1. Learn distinguishability and indistinguishability of identical particles, construct symmetric and anti symmetric wave functions , students able to solve real problems 2. Grasp the concepts of spin and angular moment as well as their quantization and addition rules. Demonstrate angular momentum operators associated with spherical and symmetrical systems, able to obtain Clebsch –Gordon coefficients and learn its importance in atomic physics 3. Understand the principles of relativistic quantum mechanics and importance of Klein Gordon equation in solving real problems and know the concept of spin arising naturally from the Dirac equation 4. Learn different fields and its importance and gain knowledge about second quantization 	

	PHY 402	Advances in Physics	2018	<ol style="list-style-type: none"> 1. Understand the synthesis of nanomaterials, their application and impact on the environment. 2. Know the details of preparation and characterization of nanomaterials, micro and nanoscale devices. 3. Learn the basics of remote sensing, different payloads, sensors, satellite platforms. 4. Get the concept of image processing & interpretation and digital data transmission and storage. 	
	PHY 403	Specialization: A) Applied Spectroscopy-II B) Condensed Matter Physics-II C) Electronics-Wireless Communications	2018	<ol style="list-style-type: none"> 1. Have the knowledge on crystal field theory and the effect of weak crystal field on S, P, D and F terms. 2. Understand the importance of rare earth doped materials and able to evaluate various laser parameters. 3. Know the instrumentation techniques used in various spectrophotometers and uses of various detectors. 4. Acquire the knowledge on two photon spectroscopy. 1. Learn the relation between stress and strain and gain knowledge on elastic constants and velocity of elastic waves in different directions 2. Gain understanding on classical theory of specific heat and quantum theory of specific heat, able to understand Gruneisen parameter and lattice thermal conductivity 3. Know theories of different bands, Fermi construction and experimental determination of Fermi surface 4. Classify, know properties and applications of amorphous semiconductors, liquid crystals and polymers. 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Understand the importance of different communications 4. Fetch details in handling the fabrication, concepts of instrumentation and circuit design. 	

	PHY 404	Elective: A) Photonics - II B) Solar Energy- Photovoltaic Aspects C) Properties and Applications of Thin Films	2018	1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Measure and analyze the chemical composition and microstructure of thin films. 2. Understand the electrical transport mechanism and optical behavior of thin films. 3. Able to understand the optical properties of thinfilms 4. Learn the various general and technical applications of thin films in day-to-day life.	
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	PHY 405	Specialization-Lab. – II / Project Work	2018	<ol style="list-style-type: none"> 1. Use standardized material to determine an unknown concentration. 2. Handle the spectrophotometers and could analyse the data. 3. Learn the applications of ESR 4. Acquire basic knowledge in the field of research. <ol style="list-style-type: none"> 1. Magnetic susceptibility determination, liquid crystal phases with temperature, 2. Working of temperature sensor, heat capacity calculation 3. Resistance variation and measurement in semiconductor with temperature 4. Able to analyze the materials and its behavior <ol style="list-style-type: none"> 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Gain hands on experience and will be able to envisage the concepts more clearly. 4. Know the fabrication process, concepts of instrumentation and circuit design. 	
	PHY 406	Elective – Lab. - II / Project Work	2018	<ol style="list-style-type: none"> 1. Get the experience on literature collection 2. Get the experience on selection of a problem independently related to recent work 3. Able to plan and execute the problem 4. Develop skills related to presentation of data, analysis discussion of the results and draw conclusions. 	

41. Psychology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	PSY 101	General Psychology-I	2018	<ul style="list-style-type: none"> • To understand the concepts and scope of psychology • To comprehend the biological basis of behavior • To study the perception and learning theories
2	PSY 102	Social Psychology	2018	<ul style="list-style-type: none"> • To understand the concepts of social psychology • To comprehend the social perception and cognition.

				<ul style="list-style-type: none"> • To study the socialization and attitudes
3.	PSY 103	Psychopathology-I	2018	<ul style="list-style-type: none"> • To understand the abnormal behavior and historical and current trends • To comprehend the models of abnormal behaviour and approaches to therapies
4.	PSY 104	Psychological Measurements-I	2018	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
5	PSY 105P	Practical-I&II	2018	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
6.	PSY-106	Human Values and Professional Ethics-I	2018	
7.	PSY 201	General Psychology-II	2018	<ul style="list-style-type: none"> • To understand fundamentals of motivation and emotion • To understand basic concepts of memory and forgetting • To comprehend the thinking, intelligence and personality of individuals
8.	PSY 202	Applied Social Psychology	2018	<ul style="list-style-type: none"> • To understand the Social Influence, Social Exchange Process in social behaviour. • To comprehend the Prejudice and Discrimination and group and individuals.
9.	PSY 203	Psychopathology-II	2018	<ul style="list-style-type: none"> • To understand anxiety and mood disorders and somatic disorders. • To study Psychosis and Cognitive Disorders across life span
10.	PSY 204a	Psychological Measurements & Statistics	2018	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
	PSY 204b	Research Methodology	2018	<ul style="list-style-type: none"> • To get knowledge of psychological tests and their use

				<p>in diagnosis.</p> <ul style="list-style-type: none"> • To make students able to diagnose patients with the help of projective tests. • To get understanding of different diagnostic systems. • Learn how to take case history of patients. • To be able to make differential diagnosis.
	PSY 204c	Computer Applications in Psychological Research	2018	<ul style="list-style-type: none"> • To understand the basic components of computer and working in Ms Office, power point and internet services. • To comprehend the application of computer knowledge through creating emails, scientific journals and data scoring
11	PSY 205P	Practical - I & II	2018	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
12	PSY 206	Human values and Professional Ethics-II	2018	
13	PSY 301	Lifespan Developmental Psychology - Infancy to Adolescence	2018	<ul style="list-style-type: none"> • To understand the scope of life span development of infancy and babyhood • To comprehend the Early and Late Childhood and Adolescence.
14.	PSY 302	Personality	2018	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. To understand the Assessment of personality
15	PSY 303	Counseling Psychology-I	2018	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and techniques
16	PSY 304a	School Psychology	2018	<ul style="list-style-type: none"> • To introduce nature of school psychology • To help children with emotional, social, and academic issues.

				<ul style="list-style-type: none"> • To collaborate with parents, teachers, and students to promote a healthy learning environment.
	PSY 304b	Organizational Behaviour and HRM	2018	<ul style="list-style-type: none"> • To understand organization and the Individual differences • To comprehend the motivation and leadership To study the decision making and organizational effectiveness.
	PSY 304c	Health Psychology	2018	<ul style="list-style-type: none"> • To understand the need of Health psychology and various models related to health and illness. To comprehend the health behaviour enhancement and management
	PSY 304d	Psychology of Disability	2018	<ul style="list-style-type: none"> • To understand historical development – Models of disabilities in the past and present scenario To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
17	PSY 305P	Practical - I & II	2018	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
18	PSY 306	Personality Development (OE)	2018	<ul style="list-style-type: none"> • To study thebiological, psychological and socio cultural determinants &Soft Skills • To help determinants and development. • To understand the Assessment of personality
19	PSY 401	Lifespan Developmental Psychology – Adulthood and Later Maturity	2018	<ul style="list-style-type: none"> • To understand the scope of life span development of Adulthood and Later Maturity. • To comprehend the Adulthood and Later Maturity.
20	PSY 402	Theories of Personality	2018	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. • To understand the Assessment of personality
21	PSY 403	Counseling Psychology - II	2018	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and

				techniques
22	PSY 404a	Psychology of Aging – Applied Aspects	2018	<ul style="list-style-type: none"> To study and understand the aging from maturity to old age. A form of discrimination against older adults based on their age. To notice gerontology and issues
	PSY 404b	Consumer Behaviour and Marketing	2018	<ul style="list-style-type: none"> To understand concept of consumer behaviour and market research To comprehend the economic, social and psychological theory of buying motives. To study the effect of advertising, sales promotion, branding and packaging
	PSY 404c	Rehabilitation Psychology	2018	<ul style="list-style-type: none"> To understand historical development – Models of disabilities in the past and present scenario To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
23	PSY 405P	Practical I & II	2018	<ul style="list-style-type: none"> To understand the knowledge about psychological assessment To analyze the observed and the collected data to prove the theoretical
24	PSY 406	Life Skills (OE)	2018	<ul style="list-style-type: none"> To learn the concept of life skills and its importance in relation to personality development of an individual. To become aware of the components of life skills and the method of imparting knowledge of life skills.

COUNSELLING PSYCHOLOGY:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document

1.	PSY 101	General Psychology-I	2018	<ol style="list-style-type: none"> 1. Understood the concepts and scope of psychology 2. Comprehended the biological basis of behavior 3. Studied the perception and sensation 4. Understood the concepts and learning theories 	
2.	PSY 102	Social Psychology	2018	<ol style="list-style-type: none"> 1. Understood the concepts of social psychology 2. Comprehended the social perception and cognition. 3. Studied the Socialization 4. Understood the meaning and theories attitudes 	
3.	PSY 103	Psychopathology-I	2018	<ol style="list-style-type: none"> 1. Understood the meaning abnormal behavior and historical and current trends 2. Comprehended the models of abnormal behaviour and approaches to therapies 3. Learned about classification and assessment of abnormal behaviour 4. Able to evaluate different approaches to therapies for abnormal behaviour 	
4.	PSY 104	Psychological Measurements-I	2018	<ol style="list-style-type: none"> 1. Understood the assessment and psychological measurements 2. Comprehended the development of psychological tests and principles of test construction. 3. Learned the Principles of Test Construction 4. Understood the test Development and test Standardization Procedures 	
5.	PSY 201	General Psychology-II	2018	<ol style="list-style-type: none"> 1. The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting 3. Comprehended the thinking and intelligence 	

6.	PSY 202	Applied Social Psychology	2018	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and individuals. 	
7.	PSY 203	Psychopathology-II	2018	<ol style="list-style-type: none"> a. Understood anxiety and mood disorders b. Acquainted with somatic disorders. c. Studied Psychosis and Cognitive Disorders d. Understood Psychological Disorders Across the Life Span 	

8.	PSY 204	<ul style="list-style-type: none"> a. Psychological Measurements & Statistics b. Research Methodology c. Computer Applications in Psychological Research 	2018	<ul style="list-style-type: none"> 1. The students acquainted with intelligence and achievement tests 2. The students learned the measurement of personality tests 3. They are clear in understanding the Statistics for Psychological Measurement 4. They have knowledge on Distribution of Scores on Variables <p>1. Understood basic research and applied research including experimental research.</p> <ul style="list-style-type: none"> 1. The students comprehended the problem & hypothesis 2. Gained knowledge on Sampling & Data Collection 3. Understood the application of research designs <p>1. Understood the basic components of computer</p> <p>2. Acquainted with Ms Office, power point and internet services.</p> <p>3. Comprehended the application of computer knowledge through creating emails, scientific journals and data scoring</p> <p>4. Able to understand Statistical Packages and its application</p>	
9.	CPSY 301	Counselling Process	2018	<ul style="list-style-type: none"> 1. Understood the counseling as helping profession 2. To acquire the relation with other helping professions 3. To know the legal and ethical issues 4. Developed the importance of verbal and non 	

10.	CPSY 302	Counselling Skills	2018	<ol style="list-style-type: none"> 1. Understood the micro-skills of counseling through a series of practices. 2. Got an idea about who to understand the people and interpret their feelings with positive appreciation 3. To provide a space where participants can grow, in the sense of allowing an encounter with them first and based on this encounter to achieve a better understanding of how they impact on other people. 4. The ability to examine and assess the clients with scientific manner.
11.	CPSY 303	Therapeutic Approaches in Counselling –I	2018	<ol style="list-style-type: none"> 1. Understood the various Therapeutic Approaches of counseling. 2. Understood the techniques relevant to therapies. 3. To acquires the basic procedures. 4. Learned how to touch in the insight of the client
12.	CPSY 304A	a. Foundations of Personality	2018	<ol style="list-style-type: none"> 1. Understood nature of personality. 2. Realized the determinants of personality 3. Found that the development of Personality. 4. Understood the Assessment of personality
13.	CPSY 304B	b. Lifespan Developmental Psychology – Infancy to Adolescence	2018	<ol style="list-style-type: none"> 1. Exposed the students to the basics of human development 2. Helped the student understand the stages of development 3. Understood the biological, social and emotional development 4. Able to evaluated the behavior of the individual at various stages.

14.	CPSY 304C	c. Psychology of Disability	2018	<ol style="list-style-type: none"> 1. Understood the historical development and models of disabilities 2. Acquire the knowledge of assessment of disability. 3. Expertised on handling the disabled Behavior 4. Collected the knowledge about various service organizations
15.	CPSY 305	Practical I & II	2018	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills 3. The students acquainted with soft skills 4. They learned more on Soft skills
16.	CPSY 401	Applications of Counselling in Special Areas	2018	<ol style="list-style-type: none"> 1. Understood how to handle the client with various problems and hailing into different age groups. 2. Learned how to handle the clients with specific problems 3. To attained what is career, personal, vocational and other applied areas of counseling 4. Gained how to organize Counseling programs to handle special concerns in Different social settings.
17.	CPSY 402	Therapeutic Approaches in Counselling –II	2018	<ol style="list-style-type: none"> 1. Understood the therapeutic approaches of counseling 2. Improve the major skills in therapeutic techniques 3. Gained specific methods involved in therapy 4. Adopted the different psycho therapeutic models of counseling.

18.	CPSY 403	Family Counselling	2018	<ol style="list-style-type: none"> 1. Understand the need and importance of family counseling. 2. Improved how to handle the family issues 3. To maximized use of tools in counseling 4. Learned the specific skills to handle family issues.
19.	CPSY 404A	a. Theories of Personality	2018	<ol style="list-style-type: none"> 1. Understood the Psychoanalytic Approach 2. Learned on behavioural approaches to personality. 3. The students comprehended the Humanistic approach 4. The students acquainted with the eastern theories of personality
20.	CPSY 404B	b. Lifespan Developmental Psychology – Adulthood and Later Maturity	2018	<ol style="list-style-type: none"> 1. Understood about adult hood 2. Aware of infancy late adult hood problems 3. Identified the early and late old age issues. 4. Acquired the developmental tasks at all ages.
21.	CPSY 404C	c. Rehabilitation Psychology	2018	<ol style="list-style-type: none"> 1. The students understood historical development – Models of disabilities in the past and present scenario 2. The students comprehended Assessment of Disability, Psychological Aspects 3. The students are aware of Behavioral Management 4. They acquainted with Organizational services
22.	CPSY 405	Practical I & II	2018	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills. 3. The students have learned more on Life Skills in Specific 4. They acquainted with Self management skills

43. Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	ST - 101	Linear Algebra	2018	<ol style="list-style-type: none"> 1. Students understood for estimation of elementary transformations in matrix and their solutions. 2. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 3. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 4. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	
	ST - 102	Probability Theory	2018	<ol style="list-style-type: none"> 1. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 2. Students also know the weak law, strong law and central limit theorem and their importance. 3. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	

ST - 103	Distribution Theory	2018	<ol style="list-style-type: none"> 1. Students know about different continuous and discrete distributions and their properties. 2. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 3. Students get the knowledge of the statistical Tests and their real life uses and applications. 4. Students get the knowledge of Regression and Correlations and their real-life applications 	
ST - 104	Practical-I (75 Practical + 25 Record)	2018	<ol style="list-style-type: none"> 1. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 2. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 3. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	
ST - 105	Statistical Computing	2018	<ol style="list-style-type: none"> 1. Students get the basic Programming Skills of C and C++. 2. Students learnt how the Data entre in the Excel with Headings. 3. Students get the knowledge of creating data ase using the MS-Access. <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	

ST - 106	Human Values and Professional Ethics-I	2018	<ol style="list-style-type: none"> 1. Students get the knowledge of the Ethical values. 2. Students get the idea about the Value education. 3. Students learn how to behave in Society. 4. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's. 	
ST - 201	Statistical Inference	2018	<ol style="list-style-type: none"> 1. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 2. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 3. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). <p>They can also calculate the problems related to point estimation and interval estimation.</p>	
ST - 202	Multivariate Analysis	2018	<ol style="list-style-type: none"> 1. Students learnt about importance of multivariate variables and their distributions 2. T^2, D^2, MANOVA models are understood and know it's importance. 3. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	

	ST-203 A & B & C	<p>(a) Linear Models and Applied Regression Analysis</p> <p>(b) Stochastic Processes</p> <p>(c) Mathematical Analysis</p>	2018	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 1. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 2. They know R^2, adjusted R^2 and C_p criteria for model selection. 3. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 1. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 2. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 3. Understand the consequences of the Intermediate value theorem for continuous function. 4. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 1. Students get the knowledge of real no.'s and set theory and their theories. 2. Students easily earn the knowledge of the sequencing theory. 3. Students get the knowledge if the integrations and their applications in the real life. 	
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ST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2018	<ol style="list-style-type: none"> 1. Students know about the solving of Numerical problems related to Multivariate data. 2. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data. 3. They can also use the statistical tools and techniques for analyzing the statistical data. <p>Students can solve the agriculture related problems using the Regression Methods.</p>
ST - 205	Sampling Techniques	2018	<ol style="list-style-type: none"> 1. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models. 2. Students studied non-Sampling errors and different remedies. 3. Implement Cluster sampling, Ratio and Regression estimation in real life problems 4. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's
ST - 206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 1. Students get the Knowledge of Status of Women in the family and society. 2. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners. 3. Students get the idea about the environmental Ethics. 4. Students Get the knowledge of Human Rights.

ST - 301	Econometric Methods	2018	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
ST - 302	Design and Analysis of Experiments	2018	<ol style="list-style-type: none"> 1. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 2. Students understood about Latin squares and their construction, missing plot technique etc. 3. Students explained about Incomplete Block Designs and their analysis, etc. 4. Understand the basic terms used in design of experiments by using appropriate experimental methods 	
ST -303	Operations Research-I	2018	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

ST -304	Practical-III (75 Practical + 25 Record)	2018	<p>Students can understand the Statical Methos in Economical Views.</p> <p>Students solved the Numerical problems related to operations research.</p> <p>Students Understand the Life Tables in Demography.</p> <p>Students can understand how the statistics use in biological aspects.</p>	
ST-305A	(a)Bio-Statistics	2018	<ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models. 3. Apply the concept of deterministic and stochastic models on simple and general epidemics. 4. Understand linearization of dynamical systems with various dimensions. 	
ST - 306	(a) Statistics for Biological and Earth Sciences	2018	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students used Advanced statistics tools with working illustrations. 	

	ST - 401	Time Series Analysis and Forecasting Methods	2018	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. 4. Check and validate models with its residual analysis and diagnostic checking. 	
	ST - 402	Demography and Official Statistics	2018	<ol style="list-style-type: none"> 1. Students know the growth rates, life tables, GRR, NRR and growth models. 2. Students understood about gene frequencies, genotypes, phenotypes etc. 3. Students learnt about population census methods, organizations in India and their functions. 4. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 	

	ST - 403	Operations Research-II	2018	<ol style="list-style-type: none"> 1. To perform Dynamic programming and their applications and computation procedure with illustration. 2. To discuss different Queuing models steady state solutions with examples. 3. To explain Inventory models with and without shortages, S-splicity, EOQ estimation with simple examples. <p>To understand Replacement problems such as block and age replacement problems, individual and group replacement policies with examples.</p>	
	ST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2018	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	

ST-405 A	(a) Statistical Process and Quality Control	2018	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
ST-405 B	Statistics for research, industry and Communitydevelopment	2018	<ol style="list-style-type: none"> 1. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 2. Students can understand the basic of research blooms taxonomy of learning levels. 3. Find the topic from current research in statistics education. 4. Students can apply the tools in design, research and developments. 	

	ST-405 C	Advanced Econometric Models	2018	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed probit, logit models and their estimation. <p>Students can understand the qualitative and limited dependent variable models.</p>	
	ST - 406 A	Business Analytics	2018	<ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students studied basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students performed advanced statistics tools for solving the problems. 	

	ST-406 B	(b) Survival Analysis	2018	<ol style="list-style-type: none"> 1. Students learnt about survival functions, their estimating methods, Distributions and their comparison for survival distributions. 2. Understand the elements of reliability, hazard function and its applications. 3. Understand the concept of censoring, life distributions and ageing classes. 4. Estimate nonparametric survival function of the data. 	
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Applied Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	APST - 101	Linear Algebra	2018	<ol style="list-style-type: none"> 5. Students understood for estimation of elementary transformations in matrix and their solutions. 6. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 7. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 8. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	

APST - 102	Probability Theory	2018	<ol style="list-style-type: none"> 4. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 5. Students also know the weak law, strong law and central limit theorem and their importance. 6. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	
APST - 103	Distribution Theory	2018	<ol style="list-style-type: none"> 5. Students know about different continuous and discrete distributions and their properties. 6. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 7. Students get the knowledge of the statistical Tests and their real life uses and applications. 8. Students get the knowledge of Regression and Correlations and their real-life applications 	
APST - 104	Practical-I (75 Practical + 25 Record)	2018	<ol style="list-style-type: none"> 4. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 5. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 6. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	

APST - 105	Statistical Computing	2018	<p>4. Students get the basic Programming Skills of C and C++.</p> <p>5. Students learnt how the Data entre in the Excel with Headings.</p> <p>6. Students get the knowledge of creating data ase using the MS-Access.</p> <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	
APST - 106	Human Values and Professional Ethics-I	2018	<p>5. Students get the knowledge of the Ethical values.</p> <p>6. Students get the idea about the Value education.</p> <p>7. Students learn how to behave in Society.</p> <p>8. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's.</p>	
APST - 201	Statistical Inference	2018	<p>4. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary.</p> <p>5. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions.</p> <p>6. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test).</p> <p>They can also calculate the problems related to point estimation and interval estimation.</p>	

	APST - 202	Multivariate Analysis	2018	<ol style="list-style-type: none">4. Students learnt about importance of multivariate variables and their distributions5. T^2, D^2, MANOVA models are understood and know it's importance.6. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	
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	<p>APST-203 A & B & C</p>	<p>(a) Linear Models and Applied Regression Analysis</p> <p>(b) Stochastic Processes</p> <p>(c) Mathematical Analysis</p>	<p>2018</p>	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 4. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 5. They know R^2, adjusted R^2 and C_p criteria for model selection. 6. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 5. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 6. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 7. Understand the consequences of the Intermediate value theorem for continuous function. 8. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 4. Students get the knowledge of real no.'s and set theory and their theories. 5. Students easily earn the knowledge of the sequencing theory. 6. Students get the knowledge if the integrations and their applications in the real life. 	
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APST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2018	<p>4. Students know about the solving of Numerical problems related to Multivariate data.</p> <p>5. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data.</p> <p>6. They can also use the statistical tools and techniques for analyzing the statistical data.</p> <p>Students can solve the agriculture related problems using the Regression Methods.</p>
APST - 205	Sampling Techniques	2018	<p>5. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models.</p> <p>6. Students studied non-Sampling errors and different remedies.</p> <p>7. Implement Cluster sampling, Ratio and Regression estimation in real life problems</p> <p>8. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's</p>
APST - 206	Human Values and Professional Ethics-II	2018	<p>5. Students get the Knowledge of Status of Women in the family and society.</p> <p>6. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners.</p> <p>7. Students get the idea about the environmental Ethics.</p> <p>8. Students Get the knowledge of Human Rights.</p>

APST - 301	Applied Econometrics	2018	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
APST - 302	Experimental Design and Applications	2018	<p>Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests.</p> <p>Students understood about Latin squares and their construction, missing plot technique etc.</p> <p>Students explained about Incomplete Block Designs and their analysis, etc.</p> <p>Understand the basic terms used in design of experiments by using appropriate experimental methods.</p>	
APST -303	Applied Operations Research	2018	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

APST -304	Practical	2018	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. <p>Students can understand how the statistics use in biological aspects.</p>
APST-305A	(a)Bio-Statistics	2018	<ol style="list-style-type: none"> 5. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 6. Describe single and multi-species population growth models. 7. Apply the concept of deterministic and stochastic models on simple and general epidemics. 8. Understand linearization of dynamical systems with various dimensions.
APST - 306	(a) Statistics for Biological and Earth Sciences	2018	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 5. Students learnt about Graphs, measures of averages, measures of dispersion etc. 6. Students understood about Basic probability and important distributions with workout examples. 7. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 8. Students used Advanced statistics tools with working illustrations.

APST - 401	Applied Forecasting Methods	2018		<ol style="list-style-type: none"> 1. 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. <p>Check and validate models with its residual analysis and diagnostic checking.</p>	
APST - 402	Applied Demography and Official Statistics	2018		<ol style="list-style-type: none"> 5. Students know the growth rates, life tables, GRR, NRR and growth models. 6. Students understood about gene frequencies, genotypes, phenotypes etc. 7. Students learnt about population census methods, organizations in India and their functions. 8. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 9. . 	
APST - 403	Reliability Theory & Survival Analysis	2018		<ol style="list-style-type: none"> 1. Students learnt about and survival analysis with their related distributions, relationships, non-parametric methods for computing survival analysis. 2. Estimate nonparametric survival function of the data. 3. Explain test of exponentiality against nonparametric classes, two sample problems. <p>Understand the elements of reliability, hazard function and its applications.</p>	

APST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2018	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	
APST-405 A	(a) Statistical Process and Quality Control	2018	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
APST-405 B	Statistics for research, industry and Communitydevelopment	2018	<ol style="list-style-type: none"> 5. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 6. Students can understand the basic of research blooms taxonomy of learning levels. 7. Find the topic from current research in statistics education. 8. Students can apply the tools in design, research and developments. 	

	APST-405 C	Actuarial Statistics	2018	<ol style="list-style-type: none"> 1. Students get the knowledge of the Economic interest rates and discount rates. 2. Students know how to construct the life tables based on the Expectancy. 3. Students to get awareness of the life annuities. 4. Students ensure how to build joint life annuities and life survivor annuities. 	
	APST - 406 A	Statistics for Marketing Research	2018	<ol style="list-style-type: none"> 1. Students learnt about Research design and how to frame questionnaire etc. 2. Statistics relating to research like univariate test like Z, t, F, ANOVA, CRD, RBD and LSD are done. 3. Multivariate statistical techniques like factor analysis, dissemination analysis and cluster analysis are used. 4. Students can understand how the marketing is happening in the real life. 	

	APST-406 B	(b) Statistical analysis using SPSS	2018	<ol style="list-style-type: none"> 1. Able to create and manipulate vectors, matrices, arrays, data frames and lists. 2. Should be able to work with character data, factor data and dates. 3. Able to write scripts and function in R and read data from .csv files, EXCEL files and SPSS files. <p>Able to use built-in functions to answer questions relating to probability distributions, parametric and</p>	
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43. Virology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	VR-101	General Microbiology	2018	<ul style="list-style-type: none"> - To learn about fundamentals aspects of microbiology including origin, evolution of microorganisms, different groups of microorganisms and their importance, microscopy principles and applications, morphology, and structure of bacteria, - To learn about Microbiological media, isolation, cultivation and enumeration methods of microorganisms, microbial growth characteristics, maintenance, and preservation of microbial cultures. - To develop knowledge on microbial taxonomy, transport of nutrients in microbes, control strategies of microorganism, - To develop knowledge on general characteristics, structure and reproduction of fungi, algae, and protozoan parasites.
2	VR-102	General Virology	2018	<ul style="list-style-type: none"> - Learn the discovery, nature, origin and evolution of viruses and the physical, biochemical, and biological properties of viruses, criteria used for nomenclature

				<p>and classification of bacteria, plant and animal viruses.</p> <ul style="list-style-type: none"> - Describe the methods used for isolation, cultivation, and purification of viruses and criteria of purity. - Define biological, physical, biochemical, and serological methods used for quantitation of viruses, major characteristics of important plant and animal virus families and biology and applications of major RNA and DNA viruses of insects. - Understand the biology of major bacteriophages, algal and fungal viruses, subviral agents and importance of viruses in human welfare with suitable examples.
3	VR-103	General Microbiology and Virology	2018	<ul style="list-style-type: none"> - Define laboratory safety measures that need to be followed in Virology and Microbiology laboratories and know the concepts and protocols of using different sterilization methods and preparation of media. - Acquire the practical skills to use various methods for cultivation, staining and characterization of different microorganisms and to check their stability under various conditions. - Learn to isolate bacteriophages from different sources and cultivate viruses in embryonated eggs and plants. - Demonstrate the mechanical, aphid and graft transmission of plant viruses and methods used to check the stability of viruses and determine the effect of virus infection on plants through chlorophyll estimation.
4	VR-104	Biological Chemistry and Analytical Techniques	2018	<ul style="list-style-type: none"> - : Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of proteins, carbohydrates, lipids, and nucleic acids.

				<ul style="list-style-type: none"> - Know how to isolate and check the activity of enzymes from various sources. - Learn to use ultrafiltration, chromatography, and electrophoresis techniques for isolation and characterization of biomolecules. - Acquire the skills to use spectroscopic and centrifugal methods for isolation and characterization of biomolecules apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
5	VR-105	Biological Chemistry and Analytical Techniques	2018	<ul style="list-style-type: none"> - Acquire knowledge on major elements and biomolecules of life and their chemical composition, bonding and primary characteristics, classification, structure, functions of carbohydrates, nucleic acids, amino acids, peptides, proteins and lipids and mechanism of protein synthesis and degradation. - Understand the types, properties, biological functions of enzymes, nucleic acids, hormones, growth regulators, vitamins, porphyrins and other pigments and nucleic acid metabolism. - Describe the approaches involved in characterization and concentration of biomolecules and discuss the principles and applications of various techniques applied for characterization of biomolecules in biological research such as chromatography, centrifugation, electrophoresis, - Learn about electrochemical techniques, basic principles and applications of flow cytometry, radioisotopes, spectroscopy, amino acid, and nucleotide sequencers
6	VR-106	Human values and Professional ethics - I	2018	<ul style="list-style-type: none"> - To enable the students to imbibe and internalize the moral values and ethical principles - 2. To learn ethics moral and social values and ethical behavior in the personal and Professional lives. - 3.To learn the rights and responsibilities and to appreciate the rights of others and to create awareness on religious values and other good acts and facts of life. - 4.To acquire knowledge about the important facts of Bhagavad Gita, values hidden in religions, religious tolerance and aware of crime, and punishment

				theories
8	VR-201	Microbial Genetics and Molecular Biology	2018	<ul style="list-style-type: none"> - To gain understanding of prokaryotic and eukaryotic genome organization, modern concept of genes, plasmids, mobile genetic elements - To learn gene transfer and mapping mechanisms in bacteria, genetics of viruses and requirements and mechanism of DNA replication. - To attain knowledge about the mechanism of DNA damage and repair, concept of mutations and their importance, processes involved in transcription, - To attain knowledge about the mechanism of translation, regulation of gene expression and gene silencing mechanisms.
9	VR-202	Recombinant DNA Technology	2018	<ul style="list-style-type: none"> - To learn basic and advanced tools and techniques, approaches and strategies used in gene manipulation in prokaryotic and eukaryotic systems. - 2. To learn the major techniques and applications of gene manipulation such as DNA sequencing, nucleic acid hybridization - 3. To understand the strategies used for gene expression in heterologous hosts, proteomics, genomics. - 4. To generate knowledge on genetically modified plants and animals and applications/implications of genetic engineering in agriculture, medicine, industry, and biology.
10	VR-203	Microbial Genetics and Molecular Biology & Recombinant DNA Technology	2018	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up Cell and Molecular Biology laboratory with ribonuclease free environment. - Isolate and estimate DNA and RNA from microbial, plant and animal tissues and demonstrate curing of plasmids, replica plating techniques, conjugation in bacteria, Ames test, induction of mutations in bacteria by physical/chemical agents, isolation of microbial mutants by gradient plate method. - Acquire practical skills to isolate plasmids from bacteria, restriction enzyme digestion of recombinant plasmid DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the preparation of southern and dot blots for hybridization.

				<ul style="list-style-type: none"> - Solve the problems related to Molecular Genetics/Biology and Recombinant DNA Technology and compete for the competitive exams such as UGC-CSIR-NET, GATE, APSET and other scientific examinations.
11	VR-204	Cell biology and Immunology	2018	<ul style="list-style-type: none"> - Acquire the practical skills in conducting various experiments related to Cell Biology such as isolation of cells, preparation of cell cultures. - Learn isolation of mitochondria, study of chromosomes, identification of stages of mitosis in onion root tips. - Identify of primary and secondary lymphoid organs in virtual animal model and illustrate basic immunology techniques such as counting of RBC and WBC, estimation of hemoglobin, identification of the blood groups and Rh. - Demonstrate antigen-antibody interactions by conducting <i>in vitro</i> serological tests such as immunodiffusion and immune-electrophoresis, DAC-ELISA, Dot-ELISA and western blotting and apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
12	VR-205	Cell biology and Immunology	2018	<ol style="list-style-type: none"> 1. To understand the structure and contents of prokaryotic and eukaryotic cells, general principles and pathways of cell communication and cell signaling. 2. To describe the concepts and methodologies of plant and animal tissue and organ cultures, cell counting and introduction to stem cell cultures. 3. To learn about the historical perspectives of immunology, innate and adaptive immunity mechanisms, various components of immune system, antigens, antibodies, <i>in vitro</i> and <i>in vivo</i> antigen and antibody interactions and 4. To understand the mechanism of humoral and cell mediated immune responses, immune effector mechanisms, MHCs, hypersensitivity reactions, autoimmune and immunodeficiency disorders, transplantation and transfusion immunology and concepts and applications of conventional and modern vaccines.

13	VR-206	Human values and Professional ethics - II	2018	<ul style="list-style-type: none"> - Understand the definition of value education, concept of human and family values, components, structure, and responsibilities of family system and acquire reflective thinking, rational skepticism. - Describe the moral responsibilities and ethical issues of medical and health care professionals, avoid unethical things, learn ethical issues raised in genetic engineering and new biological technologies. - Learn to practice ethical standards in business by understanding ethical theories and maintain work ethics to build trust between businessman and consumer and avoid unethical behavior and ethical abuse and develop scientific temper, digital literacy. - Learn to practice environmental ethics by taking responsibility to protect environment and ecosystem and understand the importance of maintenance of social ethics and ethics of media.
14	VR - 301	Plant Virology	2018	<ul style="list-style-type: none"> - Understand the induction of plant virus diseases, virus-host interactions and movement strategies. - Learn the vector and non-vector modes of plant virus transmission, virus-vector relationships and molecular mechanisms involved in virus vector interactions and the approaches used for identification and characterization of the viruses and virus strains. - Acquire the knowledge on plant virus spread and survival in nature and approaches used to detect plant viruses and diseases. - Describe the approaches used for the control and management of plant viruses and vectors and strategies used for acquiring plant virus resistance.
15	VR - 302	Plant Viruses and Diseases	2018	<ul style="list-style-type: none"> - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of cereals and millets, oil seed crops - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases

				<p>of vegetable, and tuber crops.</p> <ul style="list-style-type: none"> - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of food legumes, fruit crops - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of cash, spice and beverage crops and flowering and foliage ornamentals.
16	VR - 303	Plant Virology or Plant Viruses and Diseases	2018	<ul style="list-style-type: none"> - Identify major virus diseases of local economically important crop plants and weeds through theory exercises, local field surveys, agricultural research station visits. - Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts. - :Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules and generation of virus free plants through apical meristem tip culture. - Identify local plant virus vectors, determine virus disease incidence, and progress curves through local field visits. -
17	VR - 304	a) Molecular Virology (OR) b) Biostatistics and Bioinformatics	2018	<ul style="list-style-type: none"> - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, clarification using organic solvents and low speed centrifugation, precipitation using sodium chloride or ammonium sulphate or polyethylene glycol or differential centrifugation, preparation of step and linear density gradients, further purification of viruses using sucrose density gradient centrifugation and final pelleting by ultrafiltration or ultracentrifugation and to check the quality and quantity of viruses using spectroscopy or transmission electron microscopy. - Isolate virus coat proteins and determine its quantity and molecular weight through spectroscopy and SDS-PAGE, respectively.

				<ul style="list-style-type: none"> - Isolate virus nucleic acids (dsRNA, RNA and DNA), estimate their quantity by spectroscopy, determine their size and molecular weight through agarose gel electrophoresis. Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation.
18	VR - 305	(a) Molecular Virology (OR) (b) Biostatistics and Bioinformatics	2018	<ul style="list-style-type: none"> - To understand molecular architecture of viruses and molecular mode of inactivating agents on viruses - To learn about types of viral genomes and steps involved in virus replication and replication strategies of DNA viruses. - 3. To understand basic concepts of statistics, construction of histogram, normal distribution, mean, median and standard deviation, comparison of means and variances, examples of proportion and count data - 4. To learn about analysis of variance, correlation and regression and statistical parameters for biological assays.
19	VR - 306	(a) Biology of Viruses and their Management (OR) (b) Biology of Virus Vectors and their Management	2018	<ul style="list-style-type: none"> - To understand the basics of general entomology, collection, preservation, maintenance and transportation of virus vectors and vector-borne viruses of animals and humans - To learn about the biology and ecology of mosquitoes, blood sucking mites and prevention and control methods of animal and human virus vectors in urban and rural settings. - To describe the methods of collection, culturing and identification of plant virus vectors, virus vector transmission mechanisms, - To learn about the soil-borne vectors, epidemiology of vector-borne viruses, management of plant virus vectors and concepts of vector resistant crops
20	VR - 401	Animal and Human Virology	2018	<ul style="list-style-type: none"> - To acquire knowledge on virus-host interactions, host innate and adaptive immune response to viruses, molecular mechanisms of viral pathogenesis, - To acquire knowledge on transmission of viruses, mechanism of virus, persistence, infection and spread in the body. - To learn the epidemiological concepts and methods of virus diseases, measures of disease occurrence, disease determinants, ecology, epidemiology - To learn the surveillance of virus diseases, strategies of virus maintenance in

				communities, basic concepts, types and patterns of disease survey, prevention, and control methods of viruses.
21	VR - 402	Animal and Human Virus Diseases	2018	<ul style="list-style-type: none"> - Learn the safety practices and To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (+) sense ssRNA viruses infecting animals and humans. - To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (-) sense ssRNA viruses infecting animals and humans - To understand the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses infecting animals and human - To learn about the prion diseases, biology, prevention, and management of major viruses of silkworm, poultry, fish and prawn, emerging and reemerging virus diseases. -
22	VR - 403	Animal and Human Virology & Animal and human virus diseases	2018	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity, and ethical guidelines to be followed in the Molecular Virology laboratory. - Learn the technologies related to preparation of media for cell/tissue cultures, preparation of cell cultures/embryonated eggs for virus cultivation and isolation and quantitation of viruses using differential centrifugation and symptomatology/spectroscopy, respectively. - Develop skills to test the plant and human viruses using serological and molecular tests and kit-based methods. - Acquire knowledge on virus-based nanotechnology protocols, virus epidemiology by doing extension activities and visiting field, poultry, agriculture research station and aqua forms.
23	VR -	Project work related to Virology	2018	<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of plant, animal and human viruses and to isolate and quantitate

	404	(OR) (a) Applied Virology (OR)		<p>viruses.</p> <ul style="list-style-type: none"> - Learn the methods to detect plant and animal viruses and able to analyze various types of results obtained from serological and molecular viral diagnostic methods. - Apply the skills acquired to prepare NPV as biopesticides and virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits. -
		(b) Tumor Biology and Viruses	2018	<ul style="list-style-type: none"> - Acquire skills to detect carcinogens and mutagens using standard tests such as Ames test. - Distinguish transformed and normal cell lines and determine the anticancer property of biologically active compounds. - Design and execute PCR and other point of care methods using commercial kits for detection of tumor viruses (HCV, HIV, HPV). - Perform cultivation of poultry tumor viruses in cell cultures and acquiring the knowledge on histopathology of animal tumor viruses. -
24	VR - 405	(a) Applied Virology (OR)	2018	<ul style="list-style-type: none"> - Understand the basic concepts, types, requirements and methodologies of plant/animal cell and tissue cultures used for cultivation of plant and animal viruses. - Learn the production of recombinant DNA technology-based antibodies and vaccines to viruses and the concepts and methods of production of virus resistant/tolerant crops and virus-based biopesticides. - Acquire knowledge about common virus infections caused to human beings through vector and non-vector borne modes and basic principles of biosafety, biosecurity, and ethical/regulatory issues in Virology and basics in Intellectual Property Rights (IPR).

				<ul style="list-style-type: none"> - Understand the utilization of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology, phage display and therapy technologies and viruses as biological weapons.
		b)Tumor Biology and Viruses	2018	<ul style="list-style-type: none"> - Acquire knowledge about the basic aspects of tumors, distinguish normal and transformed cells and describe the role of oncogenes and tumor suppressor genes in causing cancers. - Understand the role and mechanism of carcinogens in inducing carcinogenesis and molecular viral mechanisms of transformation and tumorigenesis. - Describe the role of oncogenes, tumor suppressor genes, viral oncogenes, types, and mechanism of RNA viruses in inducing tumors. - List the DNA viruses causing tumors and learn their tissue transformation mechanisms, role of tumor suppressor genes in tumor suppression, immune mechanisms against tumors, immunotherapy, and physical and chemical therapeutic interventions against tumors
25	VR - 406	(a) Clinical Virology (OR)	2018	<ul style="list-style-type: none"> - Acquire basic understanding of virus properties, virus replication and learn methods of virus isolation and characterization of viruses using serological and molecular techniques. - Learn to collect, preserve the virus samples, and detect the viruses using biological, serological, and molecular methods, laboratory biosafety and quality control practices. - Understand the principles of epidemiology, disease occurrence patterns, disease surveillance and control strategies, concept, and methods of modern vaccines to

				<p>viruses.</p> <ul style="list-style-type: none"> - Learn about the approaches used for prevention and control of clinically important infectious caused by human viruses, unconventional slow viruses, and prions.
		(b) Emerging Infectious Viral Diseases		<ul style="list-style-type: none"> - Understand the evolution, biology, epidemiology, and emergence of infectious virus diseases, biology of emerging infectious diseases, zoonotic infections - Learn about the biology, clinical symptoms, epidemiology, diagnosis, and control of viruses causing AIDS and SARS and host defense mechanisms against infectious virus diseases. - Describe the biology, clinical symptoms, epidemiology, diagnosis, and control of vector borne emerging infectious viral diseases. - Acquire knowledge on impact of social and environmental change on emergence of viruses, vector control and antiviral therapies, vaccines, public health measures and bioterrorism.

44. Zoology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	ZOO-101	Invertebrata & Chordata	2018	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p>

				<p>iii. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>
2	ZOO-102	Genetics & Evolution	2018	<p>i. Students will appreciate the concept of epigenetics as a key mechanism of regulation of gene expression steering development and cell fate that can ultimately be affected in disease condition</p> <p>ii. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2018	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p>

				<p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2018	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	ZOO-105	Metabolic Regulation & Cell Function	2018	<p>i. The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p>

				<p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	ZOO-106	Human Values and Professional Ethics-I	2018	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2018	
7.	ZOO-201	Cell Biology & Immunology	2018	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell</p>

				<p>types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	ZOO-202	Molecular Biology	2018	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students would gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares</p>

				students for further education employment in teaching, basic research or the health Professions.
9.	ZOO-203P	Practical-I Molecular Biology and Cell Biology	2018	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	ZOO-204P	Practical-II Comparative Animal Physiology and Immunology	2018	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various</p>

				aspects of immunological response and how it's triggered and regulated.
11	ZOO-205	Comparative Animal Physiology	2018	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	ZOO-206	Human Values and Professional Ethics-II	2018	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
			2018	

13	ZOO-301	Developmental Biology	2018	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	ZOO-302	Environmental Biology	2018	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem</p>

				solving.
15	ZOO-303P	Developmental Biology and Tools & Techniques	2018	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	ZOO-304P	Environmental Biology and Enzymology	2018	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology.</p>

				<p>They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	ZOO-305A	Tools & Techniques	2018	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	ZOO-305B	Enzymology	2018	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	ZOO-305C	Bioinformatics & Biostatistics	2018	<p>i. Familiar with various Applications of</p>

				<p>Bioinformatics by exploring the fundamentals of computer applications in Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	ZOO-306A	Economic Zoology	2018	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p>

				<p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	ZOO-306B	Genetic Engineering	2018	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
	ZOO-306C	Human Health and Infectious diseases	2018	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>
22	ZOO-401	Neurobiology	2018	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p> <p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
23	ZOO-402	Toxicology	2018	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of</p>

				<p>toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
24	ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2018	<p>i. Learnt about structure, function and organization of Neurons in the Central nervous system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effective communicate with both specialist and non-specialist audiences/community.</p>
25	ZOO-404P	Toxicology and Animal Behavior & Wild	2018	<p>i. Skill development in environmental and</p>

		life		<p>occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
26	ZOO-405A	Animal Biotechnology & Microbiology	2018	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p>

				<p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
27	ZOO-405B	Animal Behavior & Wild life	2018	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
28	ZOO-405C	Endocrinology	2018	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>

29	ZOO-406A	Environmental Impact Assessment & Green Auditing	2018	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
30	ZOO-406B	Structural Biology	2018	<p>i. Understand the evolution of protein structural motifs and domains and associate this with function;</p> <p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
31	ZOO-406C	Pathobiology	2018	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest</p>

				<p>preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
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Animal Biotechnology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill Development
1	ABT- Core-101	Metabolic Regulation & Cell Function (MRCF)	2018	<ul style="list-style-type: none"> • Knowledge on chemical bonds, thermodynamics principles and metabolisms of Glycolysis, TCA Cycle and their biomedical importance will be gained. • Metabolic disorders of urea cycle and importance of proteins structure and functions can be understood. • Biosynthesis of purine and pyrimidine nucleotide and Clinical disorders of purine and pyrimidine metabolism can be learnt • To become proficient in Biomedical importance of lipids and over view metabolism of carbohydrate, protein and lipids

2	ABT- Core-102	Tools & Techniques (TT)	2018	<ul style="list-style-type: none"> • Skills will be acquired on chromatography, centrifugation, electrophoresis and blotting techniques • To get knowledge on cell and tissue culture, cell types, culture media and overview of stem cell biology • To acquire skill on electrganetic spectrum, type of detectors, electophysiological methods and brain activity recording techniques • Microscopic techniques, different fixation and staining techniques, tissue processing for microtomy, cryotechiques will be learnt
3	ABT-Core-P-103	Metabolic Regulation & Cell Function	2018	<ul style="list-style-type: none"> • Practical knowledge will be gained on biochemical assays like estimation of proteins, structural proteins, soluble proteins, free amino acids, total carbohydrates and total cholesterol. • To gain knowledge in handling equipments like cooling centrifuge, autoclave, laminar air flow etc., and, maintenance of animal cell culture laboratory. <p>To learn microbial media preparation for their culture and identification</p>
4	ABT-Core-P-104	Tools & Techniques	2018	<ul style="list-style-type: none"> • Isolation of DNA from chick liver • Agarose gel electrophoresis • Estimation of DNA and RNA by diphenyl anime method and orcinal method • Paper chromatography • Platting procedures • Gram staining • Anti microbial susceptibilities test

5	ABT-CF-105	Microbiology and Diseases	2018	<ul style="list-style-type: none"> • Microorganisms classification and structure of prokaryotic and eukaryotic microorganism can be understood • To get knowledge on Nutritional requirements to microorganisms, growth of microorganism, control of microorganism and microbes of biotechnological importance • To become proficient in chemical nature of gene, plasmids incompatibility, horizontal transfer of genome among the microbial community and Benzer's classical studied on II locus • To learn diseases caused by microorganism
6	ABT -EF-106	Human Values & Professional Ethics (HVPE)-I	2018	<ul style="list-style-type: none"> • Knowledge will be gained on nature of ethics its relation to religion. Politics, Business • To understand nature of values Good and Bad, end and means, analysis of basic moral concepts, good behavior and respect for elders, character and conduct • Proficient on hagavad Githa • Crime and theories of punishment will be learnt
7	ABT- Core-201	Molecular Biology (MB)	2018	<ul style="list-style-type: none"> • To gain knowledge on DNA structure, genome of Nuclear and mitochondrial and maternal Inheritance • To understand replication in prokaryotes, Enzymology of DNA replication, Discontinuous replication and Bidirectional replication • Synthesis of RNA, Types of RNA, Genetic code and Ribosome structure will be understood <p>Knowledge will be gained regulation I and II and Operon concepts</p>
8	ABT- Core-	Animal Cell culture & Stem Cell Biology	2018	<ul style="list-style-type: none"> • To understand animal cell culture, biology

	202	(ACC-SCB)		<p>of stemcells and embryonic stem cell</p> <ul style="list-style-type: none"> To learn propagation of embryonic stem cells, nuclear transfer technology, animal cloning and stem cell differentiation To gain knowledge on stem cell plasticity, stem cell assay and protocols, stem cell separations and stem cell therapies <p>To learn stem cells and tissue engineering, human embryonic stem cells and society, intellectual property results</p>
9	ABT-Core-P-203	Molecular Biology & Immunology	2018	<ul style="list-style-type: none"> Effect of UV radiation on bacterial growth SDS PAGE Electrophoresis Blood grouping Blood smear preparation RBC count Radial Immuno Diffusion Neubauer chaber
10	ABT-Core-P-204	Animal Cell culture & Stem Cell Biology & Cell Biology	2018	<ul style="list-style-type: none"> Laboratory safety rules and regulations Animal handling and care Preparation of cell culture media Staining of animal cells Preparation of cell lines Culture of virus in chick embryo
11	ABT- CF-205	Cell Biology & Immunology (CB&IM)	2018	<ul style="list-style-type: none"> Able to learn organization of prokaryotic and eukaryotic cell, Nucleus structure, Eukaryotic chromosome and polytene and lamp brush chromosomes

				<ul style="list-style-type: none"> • To learn mechanism of cell division, regulation of eukaryotic cell cycle, chromosomal abnormalities and tumor biology • To understand types of immunity, types of cell involved in immune response, structure and function of antibody and complement cascade • To gain knowledge on Antigen presentation, hypersensitivity reactions, immune tolerance and immunopathology
12	ABT- EF-206	Human Values & Professional Ethics (HVPE)-II	2018	<ul style="list-style-type: none"> • To gain knowledge on value education • To learn medical ethics • To become proficient on business ethics • To understand environmental ethics and social ethics
13	ABT- Core-301	Enzymology (ENZ)	2018	<ul style="list-style-type: none"> • To understand enzyme specificity, enzyme catalysis and isolation and purification of enzymes • To gain knowledge on theories of enzymes kinetics, enzyme kinetics and its importance, effect of reactant concentrations and effect of temperature of pH and enzyme concentration reaction rate • To become proficient on clinical aspects of enzymology, immobilized enzymes, isoenzymes and enzyme engineering
14	ABT- Core-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2018	<ul style="list-style-type: none"> • To become proficient on structure and function of male and female reproductive system; reproductive cycles and contraception in male and females • To gain skill on sex determination, selection for qualitative inherited characters, parental determination and verification and progeny testing • To understand artificial insemination techniques, in vitro fertilization, embryo transfer technology, microinjection and macroinjection

				<ul style="list-style-type: none"> • To learn transgenic technology development, generation of chimeric, transgenic and knockout mice
15	ABT-Core-P-303	Enzymology & Genetic Engineering	2018	<ul style="list-style-type: none"> • To determine the effect of substrate concentration, enzyme concentration and temperature on enzyme activity • Measures of central tendency • regression and correlation analysis • T-test
16	ABT-Core-P-304	Animal Reproduction, Breeding & Transgenic Technology & Environmental Biotechnology	2018	<ul style="list-style-type: none"> • To estimate the sperm motility, sperm count , sperm membrane integrity test and pH of semen. • Determination sperm viability • Retrieval of gene and protein sequence from gene and protein bank, redelivery
17	GE-305A	Cancer Biology	2018	<ul style="list-style-type: none"> • To gain knowledge on cancer types and tumor development • To learn oncogenes, mechanisms of onogene activation and chromosomal translocation • To understand cell cycle regulation and cancer, DNA Damage and repair • To learn tumor immunology, Vaccine development, tumor cell evasion of immune defenses
18	GE-305B	Environmental Biotechnology (EBT)	2018	<ul style="list-style-type: none"> • To gain knowledge on waste and pollutants, hazards from wastes and pollutants and hazards from chemicals in wastes

				<ul style="list-style-type: none"> Waste treatment, treatment of liquid wastes, treatment of solid waste and contributions of biotechnology to waste treatment will be understood To become proficient in aerobic waste water treatment and measurement of pollution levels To learn anaerobic treatment of waste water, biodegradation of xenobiotics compounds, hazards from xenobiotics and bioremediation
19	GE-305C	Biostatistics & Bioinformatics	2018	<ul style="list-style-type: none"> To understand prediction of protein structure and protein sequence database, prediction of gene structure, submission of sequence to database, phylogenetic analysis To learn biostatistics, measures of location and dispersion, curve fitting and correlation and regression To understand probability distribution, tests of significance, student t-test and F-test, chi square test and their application
20	OE-306A	Animal Biotechnology & Industrial Applications	2018	<ul style="list-style-type: none"> To gain knowledge on preservation animals engineered bacteria/yeast/ cell lines, metabolic engineering, fermentative production and glycolytic pathway To understand monoclonal antibodies production and genetically engineered products To know the DBT guidelines, Global scenario of transgenic micro organisms and ethical issues related to biotechnology products
21	OE-306B	Genetic Engineering (GE)	2018	<ul style="list-style-type: none"> Use of enzymes in DNA and RNA synthesis, restriction enzymes and ligation and modification o DNA

				<ul style="list-style-type: none"> • To learn vectors for constructions of genomic libraries, expression vectors, promoters and vectors used for cloning • To gain knowledge on DNA fragments, cDNA synthesis, PCR • To become proficient on ligation between cohesive and blunt end DNA fragments, introduction of cloned genes into host and expression of cloned genes
22	ABT- Core- 401	Medical Biotechnology (MBT)	2018	<ul style="list-style-type: none"> • To understand disease diagnosis, use of monoclonal antibodies in detection of genetic disease • To learn Disease treatment, interferons, growth factor, and antisense nucleotide as therapeutic agent • To gain knowledge on gene therapy, types of gene therapy, augmentation therapy and targeted transfer • To become proficient on forensic medicine, preparation of DNA sample. Approaches for DNA analysis and applications of forensic medicine
23	ABT- Core- 402	Fermentation Technology and Down streaming Process (FTDSP)	2018	<ul style="list-style-type: none"> • To understand cell distribution methods, separation techniques, purification by chromatographic techniques and isolation and screening and maintenance of industrially importance microbes • To learn bioreactor design, fermentation economics, upstream processing, membrane based

				<p>separations</p> <p>To gain knowledge on importance of downstream processing economics of downstream processing</p>
24	ABT-Core-P-403& 404	Project and Viva- Voce	2018	<ul style="list-style-type: none"> Students must perform project work which includes experiments related to Toxicology, Animal Tissue culture, Fermentation technology or any work related to biology. <p>After completion of project work students have to prepare dissertation by their own and submit to the committee members.</p> <ul style="list-style-type: none"> Evaluation of dissertation will be conducted by committee members through Viva-Voce
25	GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2018	<ul style="list-style-type: none"> To understand socio-economic and legal impact of biotechnology, use of genetically modified organisms, moral and ethical issues in biotechnology and safety issues with GMO To learn intellectual property right, evaluation of patenting, application of GATT and IPR and WTO Act and global and Indian biodiversity To gain knowledge on Indian Patent Act 1970, role of country patent office, U.S. Patent trademark office and U.S. Paten system Vs Indian Patent system To gain knowledge on Ethics and genetic engineering, patent of genes, human cloning, stem cell, regulatory requirements for drugs and biologics, GLP and GMP
26	GE-405B	Drug design and Development	2018	<ul style="list-style-type: none"> To learn drug design, analog approach of

				<p>drug designing</p> <ul style="list-style-type: none"> • To understand SAR Vs QSAR, Partition coefficient, Hammett's substituent constant and Taft's steric constant, Free Wilson mode, 3D-QSAR approach like COMFA and COMIA • To gain knowledge on pharmacological screening and assays, pharmacological screening models for therapeutic areas, cell based assay, biochemical assay, radiological binding assay, small molecule manufacturing • To learn Drug Laws, FDA, OECD, ICH, Schedule Y, drug registration, Regulations of human pharmaceuticals and biological products, and clinical trial design
27	GE-405C	Animal Cell Culture Techniques	2018	<ul style="list-style-type: none"> • To understand Animal cell culture, culture medium, characteristics of cell in culture, measurement of viability and cytotoxicity, cell types and apoptosis • To gain knowledge in scaling up of animal cell culture, cell transformation, tissue engineering, transgenic animals, animal cloning • To become proficient in improvement of biomass, pharming products, plasminogen activator and ethical issues related to biotechnology products
28	OE-406A	Advanced Genomics and Proteomics	2018	<ul style="list-style-type: none"> • To learn structure of Prokaryotic and Eukaryotic genomes, Isolation and purification of

				<p>genomic DNA, Construction of Physical maps and Whole genome sequence alignment</p> <ul style="list-style-type: none"> • To understand genome annotation, methods for gene identification, functional genomics, transcript profiling • To learn protein structure, sample preparation and separation 2D-analysis, Multidimensional liquid chromatography, protein-protein interactions analysis <p>To gain knowledge on DNA /protein sequence homologies, Gene duplication and</p>
29	OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2018	<ul style="list-style-type: none"> • To understand Types of honey bees, life history of honey bees, management of apiculture and by products of honey bees and economic importance disease and their control • To become proficient on fresh water fin fish culture, shell fish (prawn and Pearls) culture • To understand historical background of vermicompost, methods of vermiculture and problems involved in vermicompost

44. Business Management

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MBA 101	Management And Organisational Behaviour	2018	Examine the Management concepts and functions. Apply the concepts of planning, decision	

				<p>making.</p> <p>Apply the concepts of delegation of authority, decentralisation and departmentation in real life situations.</p> <p>Analyse the controlling principles and practices, Ethics and corporate social responsibility.</p> <p>Evaluate the basic concepts of organizational conflicts and climate.</p>	
2	MBA 102	Managerial Communications	2018	<p>Apply the basic concepts of communication for business correspondence.</p> <p>Distinguish different forms of communication.</p> <p>Evaluate different types of communication.</p> <p>Adapt report writing skills of different types on need basis.</p> <p>Acquire presentation skills along with the interview techniques.</p>	
3	MBA 103	Managerial Economics	2018	<p>Describe the importance of managerial economics and its contribution to decision making in different types of business organizations by the managerial economist.</p> <p>Apply the basic principles of managerial economics.</p> <p>Apply demand analysis concept in the real life business situations.</p> <p>Discuss the meaning and usefulness of the production function and cost function in analysing the firm's production activity.</p>	
4	MBA 104	Accounting For Managers	2018	<p>Outline the basic knowledge of accounting, bookkeeping, accounting Principles, accounting cycle.</p> <p>Apply the concepts of journal, ledger and Trail balance.</p>	

				<p>Identify the nature of expenditure and revenue for preparation of financial statements of business.</p> <p>Examine the role of accounting policies like depreciation.</p>	
5	MBA 105	Quantitative Analysis For Management Decisions	2018	<p>Recall the fundamentals in Mathematics and Statistics.</p> <p>Demonstrate the methods to solve derivatives, progressions and gaming.</p> <p>Choose decision making in a competitive situation.</p> <p>Solve transportation Problem with minimum cost of transport of commodities.</p>	
6	MBA 106	Information Technology For Managerial Applications	2018	<p>Identify various network topologies.</p> <p>Apply Various Mathematical & Statistical Operations Using MS office &MS-Excel.</p> <p>Create Effective basic power point Presentations</p>	
7	MBA 107	Business Statistics	2018	<p>About the information needs, sources of data and measures of central tendency .</p> <p>The concept of Scientific Research and the methods of conducting Scientific Enquiry.</p> <p>The Statistical Tools of Data Analysis.</p>	
8	MBA 108	Human Values And Professional Ethics	2018	<p>About ethics, values and morals.</p> <p>The concepts of value based education and its relevance.</p> <p>Learn about environmental and social ethics</p>	
9	MBA 201	Marketing Management	2018	<p>Outline the concepts of marketing.</p> <p>Create the segmentation, targeting and positioning in marketing.</p> <p>Analyse various phases of product life cycle.</p> <p>Evaluate various methods of pricing and identify the best pricing strategy.</p>	

				Evaluate marketing communication strategies.	
10	MBA 202	Financial Management	2018	<p>Outline the basic concepts of Financial Management.</p> <p>Comprehend the various methods of Investment Analysis and apply various techniques of capital budgeting.</p> <p>Adapt the concepts of leverage, capital structure and its effect on the long term survival of the firm.</p> <p>Appraise various methods of computation of cost of capital.</p>	
11	MBA 203	Human Resources Management	2018	<p>Outline the functions and challenges of HRM.</p> <p>Apply different concepts of HR Planning, Recruitment, Selection, Training, Interviewing Techniques and Executive Development Programs.</p> <p>:Apply the uses of job analysis, job description, job specification, ergonomics in industry and the methods of job evaluation.</p> <p>Utilize the various methods of performance appraisal.</p>	
12	MBA 204	Production Management	2018	<p>Apply the basic concepts of production and operations management and identify types of manufacturing processes.</p> <p>Define and explain concept of production planning and control.</p> <p>Identify effective plant location and plant layout.</p> <p>Design strategies to improve productivity.</p>	
13	MBA 205	Business Research Methods	2018	<p>Adapt the fundamentals of Business research methodology.</p> <p>Identify research problem.</p> <p>Apply sample and census survey and measuring</p>	

				<p>techniques. Design data collection techniques. Develop data processing procedures and apply tools. Draft thesis/report writing.</p>	
14	MBA 206	Management Information Systems	2018	<p>Understand various types of information systems. Analyse the various functional information systems</p>	
15	MBA 207	Operation Research	2018	<p>Understand various concepts and techniques of OR. Apply various OR techniques to improve the efficiency of the organisations.</p>	
16	MBA 208	Leadership Values	2018	<p>Identify the leadership qualities to run an organization successfully. Appraise the various concepts of value based leadership.</p>	
17	MBA 301	Business Environment	2018	<p>Outline the basic concepts of business environment and its components. Analyze the structure of Indian economy. Discuss the components of fiscal policy and balance of payments. Evaluate different trade related policies.</p>	
19	MBA 302	Entrepreneurship	2018	<p>Understand the concept of entrepreneurship. Analyse entrepreneurship development programs in India and contents for training for entrepreneurial competencies. Develop Creativity in entrepreneurship. Design the project reports & make project evaluation</p>	
20	MBA 311	Consumer Behaviour	2018	<p>Evaluate the consumer behaviour and business strategies. Apply the various consumer behaviour models.</p>	

				Build the psychological process and develop the effective strategy in terms of impact on consumer behaviour.	
21	MBA 312	Customer Relationship Management	2018	Develop the concepts of CRM and strategies in business. Appraise the customer profile and perception of customer behavior in relationship perspectives. Analyse strategies for customer acquisition, models of CRM.	
22	MBA 313	Marketing Research And Information Systems	2018	Understand basic concepts of research and methodology of conducting researches in marketing domain. <ul style="list-style-type: none"> • Pursue the summer training/ project work and a winter project work and a professional career in Marketing Research domain. 	
23	MBA 314	Advertising And Sales Promotion Management	2018	Discuss the basic concepts of advertising for better understanding the challenges and opportunities in advertising . Analyse the relations of advertising with segmentation and budget decision . Design better advertising strategies for the company . Identify media options which are suitable for the company for better promotion . Develop an effective advertising campaign for the company .	
24	MBA 315	Product And Brand Management	2018	Discuss the importance of brand image in marketing . Formulate brand vision which communicates better the organisations' policy on Branding . Analyse brand promotion methods in brand communication .	

				Analyse factors influencing brand extension decisions . Design brand marketing programmes and for better brand performance .	
25	MBA 316	Digital Marketing	2018	Get knowledge regarding basic concepts of Digital Marketing. Analyse and Choose different channels of digital marketing according to the changing requirements of the markets Construct different digital marketing plans on situational basis. Manage digital by conducting a marketing research and adapt the changes by creating new goals for further reputation.	
26	MBA 321	Financial Services	2018	Have awareness on insurance industry & its regulations. Create awareness on different financial services.	
27	MBA 322	Investment Management	2018	Analyse various investment alternatives for effective investment decision . Discuss the importance of security analysis in investment decision process . Design bond management strategies to realise good return on bond investment . Apply different equity valuation methods for the valuation of securities . Construct optimal portfolio for higher return at lower risk . Analyse different schemes of mutual funds for better investment decision .	
28	MBA 323	Business Taxation	2018	Conclude the fundamentals of Taxation . Discuss taxation methods of companies and individuals . Analyse income sources from business through	

				taxation . Evaluate Tax management strategies	
29	MBA 402	Strategic Management	2018	Develop vision, mission and objectives of the organization. Analyse industry and develop techniques of competitive analysis. Appraise strategic leadership styles and actions. Formulate effective strategies in business. Develop a frame work for the implementation strategies in business. Evaluate the strategy controls by measuring performance of organization.	
30	MBA 403	Business Laws And Ethics	2018	Analyze the Indian Contract Act. Evaluate Sales of Goods Act and the machinery for redressal of consumer grievances. Elaborate rights and duties of agent and principal, Principal's liability for the acts of agent and the procedure for termination of agency. Examine the rights and duties of partners, dissolution of partnership firm.	

46. Computer Science

Master of Computer Applications (MCA)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MCA 101	Discrete Mathematical Structures	2018	1. The students become familiar with the Sampling Distributions like with

				<p>replacement and without replacement</p> <ol style="list-style-type: none"> 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution
2	MCA 102	Object Oriented Programming with Java	2018	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
3	MCA 103	Computer Organization	2018	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
4	MCA 104	Operating Systems	2018	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
5	MCA 105	105A.Accounting and Financial management 105B.Accounting Essentials for Computer Applications	2018	<ol style="list-style-type: none"> 1. Use of Accounting information to managers with in the organization. 2. Informs the business decision & control the Management Functions.
6.	MCA 106 P	Software Lab I	2018	<ol style="list-style-type: none"> 1. The students become familiar with the

		(based on 101 & 103)		<p>Sampling Distributions like with replacement and without replacement</p> <ol style="list-style-type: none"> 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution. 4. To gain knowledge about the Micro Processors. 5. To study the hierarchical memory system including cache memories and virtual memory
7.	MCA 107 P	Object Oriented Programming Lab	2018	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
8.	MCA 108P	Operating Systems Lab	2018	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
9.	MCA 201	Computer Oriented Operations Research	2018	<ol style="list-style-type: none"> 1. solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities.

				<ol style="list-style-type: none"> 2. formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. analyse the general nonlinear programming problems. 4. formulate the nonlinear programming models.
10.	MCA 202	Data Structures using Java	2018	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
11	MCA 203	Data Communication and Computer Networks	2018	<ol style="list-style-type: none"> 1. Understand the Network Terminologies and the components used to build networks. 2. Understand Network Models (Topologies) to establish networked systems. 3. Understand the internal architecture, working procedure of OSI Layer and Protocols.
12	MCA 204	Advanced Database Management Systems	2018	<ol style="list-style-type: none"> 1. Students will get an attempt to provide with the advanced information about ADBMS and their development. 2. This Subject also provides the conceptual background necessary to design and develop distributed database System for real life applications and also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms.

				<ol style="list-style-type: none"> 3. How SQL Programs are implemented as a series of primitive operations and how DDBs are implemented and how applications are design for those DDB
13	MCA 205	205A. E-Commerce	2018	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of management information systems. 2. Have the knowledge of the different types of management information systems. 3. Understand the processes of developing and implementing information systems and be aware of the ethical, social, and security issues of information systems;
14		205B. Cyber Security	2018	<ol style="list-style-type: none"> 1. Analyze and evaluate the cyber security needs of an organization and determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. 2. Measure the performance and troubleshoot cyber security systems and implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. 3. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators, Design and develop a security architecture for an organization and design operational and strategic cyber security strategies and policies.
15		205C. Neural Networks	2018	<ol style="list-style-type: none"> 1. Define what is Neural Network and model a Neuron and Express both

				<p>Artificial Intelligence and Neural Network.</p> <ol style="list-style-type: none"> 2. Analyze ANN learning, Error correction learning, Memory-based learning, Hebbian learning, Competitive learning and Boltzmann learning. 3. Implement Simple perception, Perception learning algorithm, Modified Perception learning algorithm, and Adaptive linear combiner, Continuous perception, learning in continuous perception.
16	MCA 301	Software Engineering	2018	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements. 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
17	MCA 302	Computer Graphics	2018	<ol style="list-style-type: none"> 1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics. 2. Discuss various algorithms for scan

				<p>conversion and filling of basic objects and their comparative analysis and Use of geometric transformations on graphics objects and their application in composite form.</p> <p>3. Extract scene with different clipping methods and its transformation to graphics display device, Explore projections and visible surface detection techniques for display of 3D scene on 2D screen and Render projected objects to naturalize the scene in 2D view and use of illumination models for this.</p>
18	MCA 303	Web Technologies	2018	<p>1. Explain the history of the internet and related internet concepts that are vital in understanding web development.</p> <p>2. Discuss the insights of internet programming and implement complete application over the web and students can Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.</p> <p>3. Utilize the concepts of JavaScript and Java, Use web application development software tools i.e. Ajax, PHP and XML etc. and identify the environments currently available on the market to design web sites.</p>
19	MCA 304	304A.Data warehousing and Data mining	2018	<p>1. To identify the scope and essentiality of Data Warehousing and Mining and to analyze data, choose relevant models and algorithms for respective applications.</p>

				<ol style="list-style-type: none"> 2. To study spatial and web data mining. 3. Students develop research interest towards advances in data mining.
20		304B.Big Data Analytics	2018	<ol style="list-style-type: none"> 1. Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. 2. Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. 3. Students Interpret business models and scientific computing paradigms, and apply software tools for big data analytics and achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications
21		304C System Programming	2018	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming.
22	MCA 305	305A. Cryptography and Network Security	2018	<ol style="list-style-type: none"> 1. Provide security of the data over the network and do research in the emerging

				<p>areas of cryptography and network security.</p> <ol style="list-style-type: none"> 2. Implement various networking protocols. 3. Protect any network from the threats in the world
23		305B.Artificial Intelligence	2018	<ol style="list-style-type: none"> 1. Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. 2. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. 3. Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool, Demonstrate proficiency in applying scientific method to models of machine learning and Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.
24		305C.Mobile Application Development	2018	<ol style="list-style-type: none"> 1. Identify various concepts of mobile programming that make it unique from programming for other platforms, Critique mobile applications on their design pros and cons. 2. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces,

				<ol style="list-style-type: none"> 3. Program mobile applications for the Android operating system that use basic and advanced phone features, and deploy applications to the Android marketplace for distribution.
25	MCA 401	401A.Cloud Computing	2018	<ol style="list-style-type: none"> 1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. 2. Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient. 3. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model. 4. Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
26		401B. Dot Net Technologies	2018	<ol style="list-style-type: none"> 1. To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. 2. Provide a consistent, object-oriented programming environment whether object code is stored and executed

				<p>locally, executed locally but webdistributed, or executed remotely.</p> <p>3. Make the developer experience consistent across widely varying types of apps, such as Windowsbased apps and Web-based apps.</p>
27		401C. Software Testing	2018	<ol style="list-style-type: none"> 1. List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects. 2. Distinguish characteristics of structural testing methods and demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. 3. Discuss about the functional and system testing methods and demonstrate various issues for object oriented testing.
28	MCA 402	402A. Essentials of Data Science	2018	<ol style="list-style-type: none"> 1. Having a clear understanding of the subject related concepts and contemporary issues. 2. Having problem-solving ability- to assess social issues and engineering problems. 3. Having a clear understanding of professional and ethical responsibility. 4. Having cross-cultural competency exhibited by working as a member or in teams. And having a good working knowledge of communicating in English – communication with the engineering community and society
29		402B.Deep Learning	2018	<ol style="list-style-type: none"> 1. Understand the role of deep learning in machine learning applications and get

				<p>familiar with the use of TensorFlow/Keras in deep learning applications.</p> <ol style="list-style-type: none"> 2. Compare Various deep learning Algorithms used for Classification Segmentation and detection. 3. Apply various concepts related with Deep Learning to solve Problems. Analyse different deep learning models in Image related projects.
30		402C.Internet of Things	2018	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
31	MCA 403	Major Project Work	2018	

M.Sc (CS) : Master of Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MSCS -101C	Computer Organization	2018	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
2	MSCS -102C	Programming in Java & Data Structures	2018	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work &

				<p>Sequential Data file handling.</p> <p>3. Maintain data using proper data organizing structures.</p>
3	MSCS -103C	Operating Systems	2018	<ol style="list-style-type: none"> 1. Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,. 2. Analyze important algorithms eg. Process scheduling and memory management algorithms. 3. Categorize the operating system's resource management techniques, dead lock management techniques, memory management techniques. 4. Demonstrate the ability to perform OS tasks in Red Hat Linux Enterprise.
4	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2018	<ol style="list-style-type: none"> 1. Ability to apply mathematical logic to solve problems. 2. Understand sets, relations, functions, and discrete structures. 3. Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. 4. Able to formulate problems and solve recurrence relations. 5. Able to model and solve real-world problems using graphs and trees.
5	MSCS – 104 GE - B	Computer Oriented Operational Research	2018	<ol style="list-style-type: none"> 1. Solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities.

				<ol style="list-style-type: none"> 2. Formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. Analyse the general nonlinear programming problems. 4. Formulate the nonlinear programming models.
6	MSCS - 05CF	Environmental Studies	2018	<ol style="list-style-type: none"> 1. Articulate the interconnected and interdisciplinary nature of environmental studies. 2. Demonstrate an integrative approach to environmental issues with a focus on sustainability. 3. Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem solving. 4. Communicate complex environmental information to both technical and non-technical audiences. 5. Understand and evaluate the global scale of environmental problems and reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.
7	MSCS - 106EF	1. A. PC Hardware Basics	2018	<ol style="list-style-type: none"> 2. Identify the hardware components of a computer. Lists the hardware components such as processor, memory, disk, main board, etc. 3. Explains the features of the hardware

				<p>components of a computer. Explains the relationships between the components of a computer and how data are transferred among the components.</p> <ol style="list-style-type: none"> 4. identify the peripheral devices outside computer. Uses computer using input devices, such as keyboard and mouse. 5. Transfers data outside the computer using output devices, such as screen and printer. Saves files to removable devices and loads files from removable devices. 6. Connects to the Internet using network cards. identify the software's running on a computer. Identifies BIOS and changes settings in BIOS.
8	MSCS - 106EF	B. Statistical Methods	2018	<ol style="list-style-type: none"> 1. Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data. 2. Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient. 3. Know the association between the attributes. Know the construction of point and interval estimators. 4. Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation.
9	MSCS -201C	Advanced Data Base Management System	2018	<ol style="list-style-type: none"> 1. Explain and evaluate the fundamental theories for advanced database architectures and query operators.

				<ol style="list-style-type: none"> 2. Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database. 3. Assess and apply database functions of distributed database. Evaluate different database designs and architecture. 4. Administer and analyze database with query optimization techniques and develop Web interface with database. 5. Understand advanced querying and decision support system.
10	MSCS -202C	Computer Networks	2018	<ol style="list-style-type: none"> 1. Describe the general principles of data communication. Describe how computer networks are organized with the concept of layered approach. 2. Describe how signals are used to transfer data between nodes. Implement a simple LAN with hubs, bridges and switches. 3. Describe how packets in the Internet are delivered. Analyze the contents in a given data link layer packet, based on the layer concept. 4. Design logical sub-address blocks with a given address block. Decide routing entries given a simple example of network topology. 5. Describe what classless addressing scheme and how routing protocols work.
11	MSCS -203C	Computer Graphics	2018	<ol style="list-style-type: none"> 1. The course introduces the basic concepts of computer graphics. It provides the necessary theoretical background and demonstrates the application of computer

				<p>science to graphics. The course further allows students to develop programming skills in computer graphics through programming assignments.</p> <ol style="list-style-type: none"> 2. Understands the core concepts and mathematical foundations of computer graphics knows fundamental computer graphics algorithms and data structures. 3. Has an overview of different modeling approaches and methods and has detailed knowledge about basic shading and texture mapping techniques. 4. Understands light interaction with 3D scenes.
12	MSCS- 204 GE – A	E- Commerce	2018	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of management information systems. 2. Have the knowledge of the different types of management information systems. Understand the processes of developing and implementing information systems. 3. Be aware of the ethical, social, and security issues of information systems;
13	MSCS- 204 GE B	Accounting And Financial Management	2018	<ol style="list-style-type: none"> 1. Use of Accounting information to managers within the organization. 2. Informs the business decision & control the Management Functions.
14	MSCS- 205CF	Human Rights And Value Education	2018	<ol style="list-style-type: none"> 1. understand the historical growth of the idea of human rights. 2. demonstrate an awareness of the international context of human rights. 3. demonstrate an awareness of the position of human rights in the UK prior to 1998.

				<ol style="list-style-type: none"> understand the importance of the Human Rights Act 1998, analyse and evaluate concepts and ideas.
15	MSCS- 206 EF A	Principles Of Management	2018	<ol style="list-style-type: none"> Understand the concepts related to Business. Demonstrate the roles, skills and functions of management. Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.
16	MSCS- 206 EF B	Internet Of Things	2018	<ol style="list-style-type: none"> Able to understand the application areas of IOT. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. Able to understand building blocks of Internet of Things and characteristics.
17	MSCS-301C	Data Warehousing and Data Mining	2018	<ol style="list-style-type: none"> Understand the functionality of the various data mining and data warehousing component. Appreciate the strengths and limitations of various data mining and data warehousing models. Explain the analyzing techniques of various data. Describe different methodologies used in data mining and data ware housing. Compare different approaches of data

				ware housing and data mining with various technologies.
18	MSCS-302C	Web Technologies	2018	<ol style="list-style-type: none"> 1. Analyze a web page and identify its elements and attributes. 2. Create web pages using XHTML and Cascading Style Sheets. 3. Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas. 4. Build interactive web applications using AJAX.
19	MSCS-303C	Software Engineering	2018	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements. 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
20	MSCS -304-GE-A	Systems Programming	2018	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating

				<p>systems).</p> <ol style="list-style-type: none"> 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming. 4. Ability to devise, select, and use modern techniques and tools needed for the design and implementation of system programs. 	
21	MSCS GE-B	-304-	Computer Algorithms	2018	<ol style="list-style-type: none"> 1. Apply design principles and concepts to algorithm design (c) 2. Have the mathematical foundation in analysis of algorithms (a, j) 3. Understand different algorithmic design strategies (j) 4. Analyze the efficiency of algorithms using time and space complexity theory (b)
22	MSCS GE-C	-304-	UID Using .Net Technologies	2018	<ol style="list-style-type: none"> 1. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed, or executed remotely. 2. Build all communication on industry standards to ensure that code based on .NET Framework integrates with any other code. 3. Building multi-tier enterprise

				<p>applications.</p> <p>4. Client-side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.</p>	
23	MSCS GE-D	-304-	IT in Forensic Science	2018	<ol style="list-style-type: none"> 1. Approach analysis of evidence without bias. 2. Develop a conceptual understanding of criminal justice system, rules of evidence, legal system. 3. develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation and scientific laboratory procedures can be applied to immediate employment or advanced study.
24	MSCS GE-E	-304-	Software Testing	2018	<ol style="list-style-type: none"> 1. Various test processes and continuous quality improvement, Types of errors and fault models. 2. Methods of test generation from requirements. 3. Behavior modeling using UML: Finite state machines (FSM), Test generation from FSM models, Input space modeling using combinatorial designs. 4. Combinatorial test generation, Test adequacy assessment using: control flow, data flow, and program mutations, The use of various test tools. 5. Application of software testing techniques in commercial environments.
25	MSCS GE-A	-305	Cloud Computing	2018	<ol style="list-style-type: none"> 1. Understand the concepts, characteristics, delivery models and benefits of cloud computing

				<ol style="list-style-type: none"> 2. Understand the key security and compliance challenges of cloud computing 3. Understand the key technical and organisational challenges 4. Understand the different characteristics of public, private and hybrid cloud deployment models.
26	MSCS -305 GE-B	Big Data Analytics	2018	<ol style="list-style-type: none"> 1. Understand Big Data and its analytics in the real world, Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. 2. Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm, Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to generate analytics. 3. Implement Big Data Activities using Hive.
27	MSCS -305 GE-C	Artificial Neural Networks	2018	<ol style="list-style-type: none"> 1. Know the main provisions neuro mathematics, Know the main types of neural networks; 2. Know and apply the methods of training neural networks; 3. Know the application of artificial neural networks; 4. To be able to formalize the problem, to solve it by using a neural network.
28	MSCS -305 GE-D	Cyber Security	2018	<ol style="list-style-type: none"> 1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.

				<ol style="list-style-type: none"> 2. Design, develop, test and evaluate secure software. 3. Develop policies and procedures to manage enterprise security risks. 4. Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training. 5. Interpret and forensically investigate security incidents.
29	MSCS -305 GE-E	Mobile App Development	2018	<ol style="list-style-type: none"> 1. Describe those aspects of mobile programming that make it unique from programming for other platforms, 2. Critique mobile applications on their design pros and cons, 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic and advanced phone features, and 5. Deploy applications to the Android marketplace for distribution.

47. Commerce

M.Com (Regular)

S.	Cou	Title of the	Years of	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill
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No.	Course Code	Course	Introduction	development
1	101	Accounting Standards & Reporting	2018	<ul style="list-style-type: none"> i. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation ii. Impart the ability to find out the cash flows and provide the skills to value goodwill iii. Create awareness about IFRS and segment reporting
2	102.	Financial Management	2018	<ul style="list-style-type: none"> i. Describe meaning, functions and objectives; role of financial manager. ii. Examine investment decision, capital budgeting, techniques of CB and methods of CB. iii. Investigate management of working capital, needs and concepts. iv. Asses financing decision, capital structure and capital theories. v. Design dividend decision and theories of dividend.
3	103.	Business Environment and Policy	2018	<ul style="list-style-type: none"> i. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment. ii. Illustrates economic environment nature and scope and new economic policy. iii. Develop political, legal environment; reasons for state intervention and government business interface. iv. Study the socio cultural environment nature, impact of social responsibility and business ethics. v. Interpret global environment; benefits and problems of MNCs and WTO.
4	104.	Organisational Behaviour	2018	<ul style="list-style-type: none"> i. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation ii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.

				<ul style="list-style-type: none"> iii. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.
5	105a	Quantitative Techniques for Business Decisions	2018	<ul style="list-style-type: none"> i. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions. ii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions. iii. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.
7	201	Advanced cost Accounting	2018	<ul style="list-style-type: none"> i. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; ii. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. iii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. iv. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2018	<ul style="list-style-type: none"> i. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. ii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. iii. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic	2018	<ul style="list-style-type: none"> i. Describe strategic management concept, importance and purpose; strategic

		Financial Management		<p>planning concept and characteristics,</p> <ul style="list-style-type: none"> ii. Explain Strategic financial management success factors and constraints. iii. Illustrate corporate valuation approaches and guidelines; value based management. iv. Identify financial distress and restructuring; countering financial distress. v. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2018	<ul style="list-style-type: none"> i. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. ii. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India. iii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India. iv. Understand the CG standards and practices in India with focus on IT and futures of CG in India.
11	205a	Working Capital Management	2018	<ul style="list-style-type: none"> i. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital ii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management. iii. To provide the skills of inventory management with different techniques.
12	206a	e-Banking Operations	2018	<ul style="list-style-type: none"> i. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India. ii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications. iii. Categorize the financial frauds in e-banking sector.
13	301	Security	2018	<ul style="list-style-type: none"> i. Find security analysis, basics of investment and objectives; fundamental analysis

		Analysis and Portfolio Management		<p>and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>ii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>iii. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2018	<p>i. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>ii. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>iii. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>iv. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a .	Tally with GST Application	2018	<p>i. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>ii. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>iii. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c .	Tax planning & Management	2018	<p>i. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>ii. Acquire the knowledge on tax planning with regard to location</p> <p>iii. To provide the skills of tax planning regard to managerial decisions and create</p>

				awareness about tax incentive of exports.
18	305a	Fundamentals of Accounting	2018	<ul style="list-style-type: none"> i. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts ii. To help the students to acquire the skills of financial statement analysis iii. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.
19	401	Financial Derivatives	2018	<ul style="list-style-type: none"> i. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions. ii. Prioritise options in financial derivatives and option pricing models. iii. Compose swap market futures, types and interest rate; pricing swaps. iv. Synthesize stock index futures, options and trading of stock futures and options.
20	402.	Project Planning & Control	2018	<ul style="list-style-type: none"> i. Define a project and operations of corporate long range planning and phases of capital budgeting. ii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting. iii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project. iv. Understand Social cost benefit analysis and methods of SCBA v. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.
21	403a	Insurance Management	2018	<ul style="list-style-type: none"> i. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector. ii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.

				<ul style="list-style-type: none"> iii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon. iv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement. v. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.
23	405a	Security Market Operations	2018	<ul style="list-style-type: none"> i. Learn the basic concepts of Indian securities market. ii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE. iii. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.

M.Com (A&F)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2018	<ul style="list-style-type: none"> iv. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation v. Impart the ability to find out the cash flows and provide the skills to value goodwill vi. Create awareness about IFRS and segment reporting
2	102.	Financial Management	2018	<ul style="list-style-type: none"> vi. Describe meaning, functions and objectives; role of financial manager. vii. Examine investment decision, capital budgeting, techniques of CB and

				<p>methods of CB.</p> <p>viii. Investigate management of working capital, needs and concepts.</p> <p>ix. Asses financing decision, capital structure and capital theories.</p> <p>x. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2018	<p>vi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>vii. Illustrates economic environment nature and scope and new economic policy.</p> <p>viii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>ix. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>x. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2018	<p>iv. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>v. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>vi. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2018	<p>iv. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>v. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>vi. Formulate sampling theory, testing of hypothesis and type I and type II errors</p>

				and Identify linear programming advantages and disadvantages; graphical and simplex method.
7	201	Advanced cost Accounting	2018	<ul style="list-style-type: none"> v. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; vi. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. vii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. viii. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2018	<ul style="list-style-type: none"> iv. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. v. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. vi. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic Financial Management	2018	<ul style="list-style-type: none"> vi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, vii. Explain Strategic financial management success factors and constraints. viii. Illustrate corporate valuation approaches and guidelines; value based management. ix. Identify financial distress and restructuring; countering financial distress. x. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.

10	204.	Corporate Governance	2018	<ul style="list-style-type: none"> v. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. vi. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India. vii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India. viii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.
11	205a	Working Capital Management	2018	<ul style="list-style-type: none"> iv. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital v. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management. vi. To provide the skills of inventory management with different techniques.
12	206a	e-Banking Operations	2018	<ul style="list-style-type: none"> iv. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India. v. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications. vi. Categorize the financial frauds in e-banking sector.
13	301	Security Analysis and Portfolio Management	2018	<ul style="list-style-type: none"> iv. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models. v. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; sharpe's, treynor's and Jensen's performance index. vi. Synthesize portfolio revision, need and strategies.

14	302.	Accounting for Managerial Decisions	2018	<p>v. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>vi. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>vii. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>viii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a .	Tally with GST Application	2018	<p>iv. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>v. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>vi. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c .	Tax planning & Management	2018	<p>iv. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>v. Acquire the knowledge on tax planning with regard to location</p> <p>vi. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2018	<p>iv. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p>

				<ul style="list-style-type: none"> v. To help the students to acquire the skills of financial statement analysis vi. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.
19	401	Financial Derivatives	2018	<ul style="list-style-type: none"> v. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions. vi. Prioritise options in financial derivatives and option pricing models. vii. Compose swap market futures, types and interest rate; pricing swaps. viii. Synthesize stock index futures, options and trading of stock futures and options.
20	402.	Project Planning & Control	2018	<ul style="list-style-type: none"> vi. Define a project and operations of corporate long range planning and phases of capital budgeting. vii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting. viii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project. ix. Understand Social cost benefit analysis and methods of SCBA x. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.
21	403a	Insurance Management	2018	<ul style="list-style-type: none"> vi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector. vii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance. viii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon. ix. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim

				<p>settlement.</p> <p>x. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2018	<p>iv. Learn the basic concepts of Indian securities market.</p> <p>v. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>vi. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>

M.Com (FM)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2018	<p>vii. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>viii. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>ix. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2018	<p>xi. Describe meaning, functions and objectives; role of financial manager.</p> <p>xii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>xiii. Investigate management of working capital, needs and concepts.</p> <p>xiv. Asses financing decision, capital structure and capital theories.</p>

				xv. Design dividend decision and theories of dividend.
3	103.	Business Environment and Policy	2018	<p>xi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>xii. Illustrates economic environment nature and scope and new economic policy.</p> <p>xiii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>xiv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>xv. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2018	<p>vii. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>viii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of interpersonal conflicts.</p> <p>ix. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2018	<p>vii. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>viii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>ix. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost	2018	ix. Obtain knowledge on the concept of cost accounting and know how it is

		Accounting		<p>different from financial and management accounting;</p> <p>x. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>xi. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>xii. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2018	<p>vii. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>viii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.</p> <p>ix. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2018	<p>xi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>xii. Explain Strategic financial management success factors and constraints.</p> <p>xiii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>xiv. Identify financial distress and restructuring; countering financial distress.</p> <p>xv. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2018	<p>ix. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>x. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p>

				<p>xi. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>xii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2018	<p>vii. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>viii. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>ix. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2018	<p>vii. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>viii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>ix. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2018	<p>vii. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>viii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>ix. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2018	<p>ix. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p>

				<p>x. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>xi. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>xii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2018	<p>vii. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>viii. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>ix. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2018	<p>vii. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>viii. Acquire the knowledge on tax planning with regard to location</p> <p>ix. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2018	<p>vii. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>viii. To help the students to acquire the skills of financial statement analysis</p> <p>ix. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2018	<p>ix. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>x. Prioritise options in financial derivatives and option pricing models.</p>

				<p>xi. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>xii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2018	<p>xi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>xii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>xiii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>xiv. Understand Social cost benefit analysis and methods of SCBA</p> <p>xv. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a	Insurance Management	2018	<p>xi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>xii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>xiii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>xiv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>xv. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2018	<p>vii. Learn the basic concepts of Indian securities market.</p> <p>viii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>ix. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.</p>

48. B. Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BPH 101A	Mathematics (For Bi.P.C. Stream)	2018	<ol style="list-style-type: none">1. This program shall create an awareness about the mathematical problems, to develop an statistical evaluation.2. To adopt skills in identifying and solving problems.3. Know the theory and their application in Pharmacy research4. Solve the different types of problems by applying theory in drug discovery
2	BPH 101B	Biology (For M.P.C. Stream)	2018	
3	BPH 101C	Biology Practicals (For M.P.C. Stream)	2018	
4	BPH 102	English & Soft Skills	2018	<ol style="list-style-type: none">1.To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation. To help students overcome stage fear and take questions.

				<p>2.To enable the students to become global citizens.</p> <p>3.This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers.</p> <p>4.At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and add value to the pharmaceutical business.</p>
5	BPH 103	Pharmaceutical. Inorganic Chemistry	2018	<p>1.To understand the history and concept of pharmacopoeia and its editions.</p> <p>2. Knowledge about the sources of impurities and methods to determine the impurities in inorganic pharmaceuticals.</p> <p>3. Identification of limit tests of different pharmaceutical inorganic compounds.</p> <p>4. To understand the method to prepare inorganic pharmaceuticals.</p> <p>5. To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.</p> <p>6. To discuss the handling and applications of</p>

				radiopharmaceuticals.
6.	BPH 104	Pharmaceutical Organic Chemistry-I	2018	<p>1. Guess and write the structure, systematic/ trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds.</p> <p>2. Understand the general concept of isomerism and distinguish structural isomers.</p> <p>3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests.</p> <p>4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified.</p> <p>5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms</p>
7.	BPH 105	Human Anatomy and Physiology	2018	<p>1. Know the fundamental knowledge on the structure and functions of the various systems of the human body.</p> <p>2. understanding all the homeostatic mechanisms of the body</p> <p>3. Understand the relationship of anatomy with various disciplines of pharmacy.</p> <p>4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition</p>
8.	BPH 106	Pharmaceutical Inorganic Chemistry Practicals	2018	<p>1. To recall the sources of limit tests, preparation and identification of compounds.</p>

				<ol style="list-style-type: none"> 2. To demonstrate the preparation of inorganic pharmaceuticals 3. To apply knowledge to perform modified limit tests. 4. To analyze various inorganic pharmaceutical compounds. 5. To select suitable method for the preparation of inorganic pharmaceuticals. 6. To assess quality of inorganic pharmaceuticals.
9.	BPH 107	Pharmaceutical Organic Chemistry-I Practicals	2018	<ol style="list-style-type: none"> 1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes 2. Get hands- on- experience in basic techniques of organic synthesis
10.	BPH 108	Human Anatomy and Physiology Practicals	2018	<ol style="list-style-type: none"> 1. Differentiate the structures of the various systems of the human body. 2. Perform the experiments like blood cell count, hemoglobin content, bleeding and clotting time and various physiological Parameters theoretically and practically. 3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system

11	BPH 109	General & Dispensing Pharmacy	2018	Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product
12	BPH 110	Pharmaceutical Organic Chemistry-II	2018	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/ trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers. 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms
13	BPH 111	Computer applications	2018	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
14	BPH 112	Pharmacognosy I	2018	The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals

				through plant tissue culture, drug interactions and basic principles of traditional system of medicine.
15	BPH 113	Human Anatomy and Physiology and Pathophysiology	2018	<p>1. Identifies Name the signs, symptoms and complications of the diseases.</p> <p>2. Students Get thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms.</p> <p>3. To Study the aetiology and pathogenesis of the selected disease states</p> <p>4. The baseline knowledge required to practice medicine safely, confidently, rationally and effectively.</p>
16	BPH 114	General & Dispensing Pharmacy Practicals	2018	This is help to understand the basic information of formulation process and how to optimise quality control solid, semisolid and parenteral dosage forms
17	BPH 115	Pharmaceutical Organic Chemistry-II Practicals	2018	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on

				chemical synthesis of important drugs under each class
18	BPH 116	Computer applications Practicals	2018	<ol style="list-style-type: none"> 1. know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
19	BPH 117	Pharmacognosy I Practicals	2018	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents by use chromatographic technique
20	BPH 201	Physical pharmacy –I (Theory)	2018	<ol style="list-style-type: none"> 1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. 2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.
21	BPH 202	Pharmaceutical Engineering (Theory)	2018	<ol style="list-style-type: none"> 1. To know various unit operations involved in manufacturing of pharmaceuticals. 2. To understand the concepts of flow of fluids, size reduction and size separation. 3 To perform different mechanisms of heat transfer. 4 To compare and contrast different types of evaporation and distillation process. 5 To determine the factors influencing mixing, filtration and centrifugation. 6 To elaborate various preventive methods used for corrosion control in pharmaceutical industries.

22	BPH 203	Pharmaceutical organic chemistry III (Theory)	2018	<ul style="list-style-type: none"> • Guess and write the structure according to the stereochemical specifications. • Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. • Assess and understand the pharmaceutical applications and importance of the specified named reactions.
23	BPH 204	Pharmaceutical Biochemistry (Theory)	2018	<p>1. Understand the principles of various fields of chemistry and biology (organic chemistry, analytical chemistry, biochemistry, genetics, metabolism, and molecular biology)</p> <p>2. Develop as independent thinkers who are responsible for their own learning. Develop transferable quantitative skills.</p>
24	BPH 205	Environmental studies (Theory)	2018	<p>This program shall create an awareness about environmental problems, develop an attitude towards concern for the environment.</p> <p>2 To compare the natural, renewable and non-renewable resources and the problems associated with them.</p> <p>3 To motivate the learners to participate in environment protection and improvement.</p> <p>4 To analyze the concepts of eco system including structure and functions.</p>

				<p>5 To adopt skills in identifying and solving environmental problems.</p> <p>6 To develop an attitude of concern for the environment</p>
25	BPH 206	Physical pharmacy –I (Practical)	2018	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods
26	BPH 207	Pharmaceutical Engineering (Practical)	2018	<p>To understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying.</p> <p>2. To demonstrate and explain about the construction, working and applications of pharmaceutical equipment's such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer.</p> <p>3. To experiment with the process variables of filtration, evaporation and infer the same.</p> <p>4. To determine radiation constant of brass, iron, unpainted and painted glass.</p> <p>5. To determine overall heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation.</p> <p>6. To estimate moisture content, loss on drying</p>

				and construct drying curves for calcium carbonate and starch.
27	BPH 208	Pharmaceutical organic chemistry III (Practical)	2018	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers. 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms
28	BPH 209	Pharmaceutical Biochemistry (Practical)	2018	<ol style="list-style-type: none"> 1. Understand the principles of various fields of chemistry and biology (organic chemistry, analytical chemistry, biochemistry, genetics, metabolism, and molecular biology) 2. Develop as independent thinkers who are responsible for their own learning. 3. Develop transferable quantitative skills.
29	BPH 210	Physical Pharmacy II (Theory)	2018	<ol style="list-style-type: none"> 1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations.

				<p>2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms</p>
30	BPH 211	Pharmaceutical Analysis I (Theory)	2018	<p>1) To understand selected instrumental analytical techniques (spectroscopic and chromatographic methods) and differentiate with volumetric analysis.</p> <p>To gain knowledge on interaction of EMR with matter and to build the analytical understanding at the level of atom, group and molecular structure of organic and inorganic compounds with different functional groups and their applications in pharmacy.</p> <p>3) To maximize knowledge on characterization and estimation of ions by spectroscopical techniques</p> <p>4) To simplify affinity of matter with stationary phase and mobile phase, physical and chemical.</p>
31	BPH 212	Pharmaceutical Technology I (Theory)	2018	<ol style="list-style-type: none"> 1. basic concepts in the field of drug delivery systems that is used in Pharmaceutical Technology. 2. uses pharmaceutical information sources medical 3. Lists in the form of liquid drug delivery systems. 4. Defines the concepts of dissolution, solubility and stability. 5. Design Solution formulations.
32	BPH 213	Pharmacognosy II (Theory)	2018	<p>This subject is intended to impart students about the fundamental knowledge of how the</p>

				<p>secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p> <ol style="list-style-type: none"> 1. Significance of pharmacognostic parameters & study of crude drugs. 2. Understand the underlying reason of evolutionary significance of secondary metabolites production in plants & other organisms & deduce their significance as medicinal molecules. 3. How these primary metabolites are used comprehensively as a source to develop Pharmaceutical & industrial applications. <p>Study about the source, name, chemical structures, methods of extraction, qualitative & quantitative analysis of glycosides & tannin compounds of plant origin.</p>
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33	BPH 214	Pharmacoinformatics & Basics in drug discovery (Theory)	2018	<ol style="list-style-type: none"> 1. Thorough Knowledge on Bioinformatics and its classification. 2. Importance of drug discovery, lead molecules in the preparation of drugs in pharmaceutical industries. 3. Good information about drug design, ligand – receptor mechanism and its applications. 4. How this subject is collaborate with other disciplinary subjects, Understanding
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				Genomics & transcriptomics.
34	BPH 215	Pharmaceutical pharmacy II (Practical)	2018	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods
35	BPH 216	Pharmaceutical Analysis I (Practical)	2018	<ol style="list-style-type: none"> 1. Discusses the effect of impurities on the quality of drugs and behavioural pattern of drugs 2. Aids in understanding the SOP and usage of software associated with various analytical instruments Helps in gaining knowledge of interpretation of spectra and of chromatograms
36	BPH 217	Pharmaceutical technology I (Practical)	2018	<ol style="list-style-type: none"> 1. Preparing the solutions 2. Preparing the emulsions 3. Preparing the syrups 4. Preparing the semisolid dosage forms
37	BPH 218	Pharmacognosy II (Practical)	2018	<ol style="list-style-type: none"> 1. Demonstrate chemical tests to identify unorganized crude drugs 2. Evaluate the quality and purity of crude drugs 3. Perform linear measurements for crude drug identification Develop quality control methods for standardisation of herbal drugs

38	BPH 301	Pharmaceutical Technology-II	2018	Course enables the student to understand and appreciate the influence of pharmaceutical manufacture of various pharmaceutical dosage forms on the performance of the drug product by use of specific technology
39	BPH 302	Medicinal chemistry - I	2018	<ol style="list-style-type: none"> 1. Gain knowledge on physicochemical and biological aspects of various drug classes. 2. Judge the effect of structural modifications with respect to biological activity <p>Develop awareness about the application of organic synthesis with respect to preparation of drugs</p>
40	BPH 303	Pharmacology - I	2018	<ol style="list-style-type: none"> 1. Gain knowledge on pharmacokinetic and pharmacodynamic aspects of drugs in general. 2. Develop understanding about physiological, pathological, and pharmacological concepts of nervous system.
41	BPH 304	Pharmaceutical microbiology	2018	<ol style="list-style-type: none"> 1. To know the various types of sterile products with their formulation in large scale industries. 2. To acquire knowledge on GMP standards sanitation, personal hygiene in sterile product manufacturing facilities.
41	BPH 305	Drug store and Industrial Management and Marketing	2018	1. This course helps to understand the students how to establish the drug store and functioning the proper channels and also procurement and dispensing of

				<p>drugs procedure as per government norms.</p> <p>2. Gain knowledge on functioning and management of pharma industry and know the regulating process in all aspects</p>
42	BPH 306	Pharmaceutical Technology-II	2018	This course helps to Identify, formulate, research on pharmaceutical solid and parenteral dosage form and solve complex problems in quality control of product
43	BPH 307	Medicinal chemistry-I practicals	2018	This course helps to how to separation and identification compound given unknown mixture. It imparts take it knowledge on crude separation and identification technique
44	BPH 308	Pharmaceutical Microbiology practicals	2018	<p>1.This course help to able to understand the different levels of microorganism growthat different conditions.</p> <p>2.Gain knowledge of the various types of sterile products with their formulation in large scale industries and acquire knowledge on GMP standards sanitation, personal hygiene in sterile product manufacturing facilities</p>
45	BPH 309	Medicinal chemistry-II (theory)	2018	<p>1.Gain knowledge on physicochemical and biological aspects of various drug classes.</p> <p>2.Judge the effect of structural modification with respect to biological activity</p> <p>3.Develop awareness about the application of organic synthesis with respected preparation of drugs</p>
46	BPH310	Pharmacology II– Theory	2018	<p>1. In continuation with the previous semester, this subject would have continued describing about the different drugs used for the treatment of diseases.</p> <p>2. Students understood the mechanism of drug action and its relevance in the treatment of different diseases.</p> <p>3. Have understood about the drugs used to treat</p>

				<p>respiratory disorders, metabolic disorders, coagulants and anti-coagulants.</p> <p>4. Recognise and explain the rationales behind the use of widely used, national organization approved treatment for the management and treatment of common diseases and conditions.</p> <p>5. Gained knowledge on the new targets of several disease conditions for the treatment</p>
47	BPH311	Pharmaceutical. Analysis II(Theory)	2018	<p>1.Gain knowledge on identification of functional groups of various drugs and other excipients.</p> <p>2.Judge the chemical interaction between the compound that effect on structural modification ions with respect to biological activity</p> <p>3.Develop awareness about the analytical equipment which are help to obtain a good quality control of pharmaceutical formulation as per pharmacopeia's</p>
48	BPH312A	Forensic Pharmacy– Theory	2018	<p>1.To recall the pharmaceutical legislations, ethics, right to information, medical termination of pregnancy and intellectual property rights.</p> <p>2.To relate the significance of Drugs and cosmetics act 1940 and its rules 1945 in relation to import and manufacture of drugs.</p> <p>3. To apply the knowledge on schedules pertaining to Drugs and cosmetics act 1940 and its rules 1945 and also administration of the act and rules.</p> <p>4. To understand the functions of pharmacy councils and implementation of education regulations in pharmacy.</p> <p>5. To appraise the importance of medicinal and toilet preparations act and narcotic drugs and psychotropic substances act and rules.</p> <p>6 To discuss the salient features of drugs and magic</p>

				remedies act, prevention of cruelty to animals' act and drugs price control order.
49	BPH312B	Clinical Trials– Theory	2018	<ol style="list-style-type: none"> 1. Know the regulatory requirements for conducting clinical trial 2. To understand the various types of clinical trial designs 3. To gain knowledge on basic concepts and establishment of pharmacovigilance 4. To know the ADR reporting, methods and tools used in pharmacovigilance
50	BPH312 C	Industrial. Pharmacy & Cosmetic Technology– Theory	2018	
51	BPH313	Medicinal Chemistry-II Practicals	2018	<p>This course helps to how to separation and identification compound given unknown mixture. It imparts take it knowledge on crude separation and identification technique</p>
52	BPH314	Pharmacology-II Practicals	2018	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. 4. Demonstration of different simulation methods. 5. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments.
53	BPH315	Pharmaceutical. Analysis II Practicals	2018	<ol style="list-style-type: none"> 1. Handling of different analytical instruments. 2. Know about the different spectroscopy and chromatography techniques that helps to attain desired quality control of all pharmaceutical aspects as per the standard pharmacopoeias 5. Finally learnt to apply the knowledge to make good

				stability of pharmaceutical product by using of pharmaceutical analytical technical method.
54	BPH 401	Medicinal Chemistry-III	2018	<ol style="list-style-type: none"> 1. To develop an understanding of the physico-chemical properties of drugs. 2. To understand how current drugs were developed by using pharmacophore modelling and docking technique. 3. To acquire knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents. 4. To acquire knowledge about the mechanism pathways of different class of medicinal compounds. 5. To have been introduced to a variety of drug classes and some pharmacological properties. 6. To acquire knowledge on thrust areas for further research
55	BPH 402:	Pharmacology-III	2018	<ol style="list-style-type: none"> 1. Students would have understood the pharmacological actions of different categories of drugs 2. They would have studied in detail about mechanism of drug action at organ system/sub cellular/ macromolecular levels. 3. They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases. 4. They would have observed the effect of drugs on animals by simulated experiments 5. They would get an idea about correlation of pharmacology with other bio medical sciences. 6. They would have understood the signal transduction mechanism of various receptors

56	BPH 403:	Pharmacognosy-III	2018	<ol style="list-style-type: none"> 1. Terpenes, Polyphenols, Alkaloids, Pharmacology, Toxicity, 2. Formulations and Preparations of Herbal Medicines. 3. How herbs influence our physiology and can be helpful against several disorders. <p>DNA Finger printing.</p>
57	BPH 404:	Biopharmaceutics & Pharmacokinetics	2018	<ol style="list-style-type: none"> 1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and them 2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, 3. To understand the concepts of bioavailability and bioequivalence of drug products and them <p>Understand various pharmacokinetic parameters, their significance & applications</p>
58	BPH 405A:	Chemistry Of Natural Products	2018	<ol style="list-style-type: none"> 1. To attain detailed knowledge about chemistry of medicinal compounds from natural origin. 2. To understand general methods of structural elucidation of medicinally active natural compounds. 3. To attain knowledge regarding isolation and purification of medicinal compounds from natural origin.
59	BPH 405B:	Hospital & Community Pharmacy	2018	<ol style="list-style-type: none"> 1. Discuss the roles and responsibilities of hospital pharmacist, hospital drug policies and guidelines for hospital pharmacy 2. Discuss various drug distribution methods in a hospital pharmacy 3. Apply various methods of inventory control 4. Formulate parenteral preparations Contribute to a

				<p>newsletter for providing continuous education and awareness</p> <p>5. Explain about handling and packaging of radiopharmaceuticals</p>
60	BPH 405C	Pharmacovigilance	2018	<ol style="list-style-type: none"> 1. Explain the regulatory requirements for conducting clinical trial 2. Describe in detail about various types of clinical trial designs 3. Explain the responsibilities of key players involved in clinical trials 4. Describe the documentational requirements for Clinical trials 5. Explain Adverse drug reaction and its management 6. Describe basic concepts, and establishment of Pharmacovigilance 7. Explain ADR reporting, methods and tools used in Pharmacovigilance 8. Describe Pharmacoeconomics and safety pharmacology
61	BPH 406	Medicinal Chemistry-III Practicals	2018	<ol style="list-style-type: none"> 1. Synthesis compounds of medicinal interest 2. Conduct monograph analysis of the pharmaceutical compounds 3. Determine the amount of drug present in an unknown solution 4. Estimate the purity of drugs by performing assays 5. Determine partition coefficient and dissociation constant of a given compound 6. Conduct planned experiments and prepare laboratory report in a standard format

62	BPH 407	Pharmacology-III Practicals	2018	<ol style="list-style-type: none"> 1. Demonstrate intraperitoneal and intramuscular routes of administration of drugs in animals and describe different anaesthetics used in laboratory animals 2. Identify and select laboratory appliances used in experimental pharmacology 3. Recommend the physiological salt solution for different isolated tissue preparations 4. Perform a bioassay procedure and create a Dose Response Curve 5. Demonstrate the screening of a drug for CNS activity 6. Conduct planned experiments and prepare laboratory report in a standard format
63	BPH 408	Pharmacognosy-III Practicals	2018	<ol style="list-style-type: none"> 1. Identify cell wall constituents and cell inclusions 2. Identify the crude drugs by its morphological characteristics and study the anatomical characters by preparing slides 3. Perform chemical tests to identify unorganized crude drugs and lipids 4. Prepare herbarium sheets 5. Conduct planned experiments and prepare laboratory report in a standard format
64	BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2018	<ol style="list-style-type: none"> 1. Compare the in-vitro drug release profile of different marketed products 2. Perform the solubility enhancement techniques for improvement of drug release of poorly water-soluble drugs 3. Estimate the bioavailability (absolute and relative) and bioequivalence from the given clinical data 4. Calculate the drug content in blood sample using Area Under Curve approach 5. Calculate and interpret various pharmacokinetic parameters from the given clinical data

65	BPH 410:	Novel Drug Delivery Systems	2018	<ol style="list-style-type: none"> 1. The use raw data and derive the pharmacokinetic models 2. and parameters the best describe the process of drug absorption, distribution, metabolism and elimination. 3. The critical evaluation of biopharmaceutic studies involving drug product equivalency. 4. The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters. 5. The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic
66	BPH 411	Pharmaceutical Biotechnology (Theory)	2018	<ol style="list-style-type: none"> 1. To know the basics of biotechnology techniques and the various systems used. 2. To understand the method of genetic engineering for production of rDNA products including monoclonal antibodies. 3. To clarify application of genetic engineering in animals. 4. To understand enzymes and their uses by immobilization. 5. To illustrate the use of fermenter for the production of fermentation products and purification by downstream process.
67	BPH 412:	Clinical Pharmacy & Therapeutics	2018	<ol style="list-style-type: none"> 1. Ability to apply the concepts of Pharmacokinetics to individualize the drug dosage regimen in clinical settings. 2. Ability to design a dosage regimen of a drug based on its route of administration 3. Ability to design and implement pharmacokinetic services 4. Intravenous to Oral conversion of dosage regimens

68	BPH 413:	Comprehensive Viva Voce	2018	<ol style="list-style-type: none"> 1. There shall be a Comprehensive Viva-Voce in IV-year II semester. The Comprehensive Viva-Voce will be conducted by a committee consisting of Head of the Department and two Senior Faculty members of the Department. 2. The Comprehensive Viva-Voce is intended to assess the students understanding of the subjects he studied during the B. Tech. course of study. 3. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.
69	BPH 414:	Project Work &Seminar	2018	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Bachelor of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2018	<ol style="list-style-type: none"> 1. Describe the instruments in experimental pharmacology. 2. Know CPCSEA guidelines and OECD guidelines. 3. Know animal physiology with their biochemical reference values in various animal species. 4. Do collection of blood, body fluids and urine from experimental animals. 5. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
2	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2018	<ol style="list-style-type: none"> 1. The pathophysiology of selected disease states and the rationale for drug therapy. 2. The controversies in drug therapy. 3. The importance of preparation of individualized therapeutic plans based on diagnosis. 4. Understanding the concepts of Clinical research;Therapeutic drug monitoring (TDM) ; concepts of Pharmacotherapeutics, Management & Current Good Clinical Practice of various diseases. 5. Studying of various types, mechanisms of Drug interaction; rational for drug combinations; Drug Toxicity and its prevention; Adverse drug reactions and its monitoring

3	MPH 103	Practical 1	2018	<ol style="list-style-type: none"> 1. Recording of concentration response curve (CRC) of acetylcholine 2. Record of the CRC of 5-HT on rat fundus preparation. 3. Record of the CRC of histamine on guinea pig ileum 4. Inotropic and chronotropic effects of drugs on isolated frog heart
4	MPH 104	Practical-II(MAT)	2018	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2018	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental

				<p>techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2018	<ol style="list-style-type: none"> 1. Awareness of ethical issues and basic ethical approaches. 2. Improved writing skills and understanding of ethical conflict. 3. Enables students to develop ability for moral reasoning and act with ethical deliberations. 4. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas. 5. Learn how to live peacefully
7.	MPH 107	Comprehensive Viva	2018	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the structure and functions of the various systems of the human body. 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy. 4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition

8.	MPH (Pharmacology)	201A	Pharmacology	Molecular	2018	<ol style="list-style-type: none"> 1. Explain the modes of action of drug at the cellular level by describing their interactions with target proteins 2. Explain the receptor signal transduction processes. 3. Explain the molecular pathways affected by drugs. 4. Understanding the applicability of molecular pharmacology and biomarkers in drug discovery process. 5. Outline the molecular features that are responsible for agonist and antagonist binding, and coupling to effector processes, with reference to the nicotinic, muscarinic, and β-adrenergic receptors
9.	MPH 202 A		Methods in Drug Evaluation		2018	<ol style="list-style-type: none"> 1. Know the commonly used instruments in experimental pharmacology. 2. describe the animal physiology with their biochemical reference values in various animal species. 3. Study of methods for collection of blood, body fluids and urine from experimental animals. 4. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
10.	MPH 203		Practical 1		2018	<ol style="list-style-type: none"> 1. Calculation of the PA_2 Calculate the PA_2 Value 2. Interpolation bioassay

				<ol style="list-style-type: none"> 3. Matching or bracketing bioassay 4. Three point bioassay 5. Four point bioassay
11	MPH 204	Practical-II(BPK)	2018	<ol style="list-style-type: none"> 1. Compare and differentiate between compartmental and non compartmental analysis 2. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms 3. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data. 4. Compare the bioequivalence of two drug products
12	MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2018	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule

13	MPH 206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 2. Learn about morals, values & work ethics. 3. Develop commitment 4. Learn about the different professional roles. 5. Ethical, social and environmental awareness 6. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2018	
15	MPH 301	Mid-Term Evaluation of Research project	2018	<ol style="list-style-type: none"> 6. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 7. Projects offer the opportunity to apply and extend material learned throughout the program. 8. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 9. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 10. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission &	2018	<ol style="list-style-type: none"> 1. Final Year Projects represent the

		presentation and Project Viva voce		<p>culmination of study towards the Master of Pharmaceutical sciences degree.</p> <ol style="list-style-type: none"> 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
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M. Pharmacy (Pharmaceutics)

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101B	ADVANCED PHARMACEUTICAL TECHNOLOGY	2018	1. Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at

				<p>pharmaceutical industries.</p> <ol style="list-style-type: none"> 2. The Active Pharmaceutical Ingredients and Generic drug Product 3. The elements of Preformulation studies, Objectives Upon completion of the course, student shall be able to understand Optimization Techniques. 4. Industrial Management and GMP Considerations, development & Stability Testing, sterilization process, Pilot Plant Scale Up Techniques & packaging of dosage forms
2	MPH 102B(Pharmaceutics)	Advanced Pharmaceutics	2018	<ol style="list-style-type: none"> 1. Upon completion of this program the student will have fundamental knowledge in preparing conventional dosage forms, pharmaceutical calculation involved in formulation and appreciate the importance of good formulation for effectiveness. 2. The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms using solubility studies and basic theories of dissolution. 3. To formulate and evaluate various novel drug delivery systems based on the molecular weight determination of

				polymers and its stability studies.
3	MPH 103	Practical-I(PHARMACEUTICS)	2018	<ol style="list-style-type: none"> 1. The passage of drugs, biopharmaceutical parameters. 2. How to do dissolution studies for the dosage forms to know the bioavailability of the drugs. 3. Solubility studies for the drugs based on its pH and its applications in the formulations of drug delivery systems. 4. To determine the molecular weight of the polymers. 5. Gives an fundamental knowledge on the stability studies
4	MPH 104	Practical-II(MAT)	2018	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 7. Discusses the principle and applications of chromatographic techniques 8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage form
5	MPH 105	Modern Analytical Techniques and biostatistics Theory	2018	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 7. Discusses the principle and applications of chromatographic

				<p>techniques</p> <p>8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>9. Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2018	<p>6. Awareness of ethical issues and basic ethical approaches.</p> <p>7. Improved writing skills and understanding of ethical conflict.</p> <p>8. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>9. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>10. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2018	
8.	MPH 201B (Pharmaceutics)	INDUSTRIAL PHARMACY	2018	<p>1. The elements of preformulation studies.</p> <p>2. Acquire skill in preparation of different types of tablets.</p> <p>3. Acquire knowledge for evaluation of various dosage forms.</p> <p>4. Acquire the knowledge of processing of dosage form on large scale that suit pharma industry</p>
9.	MPH202B(Pharmaceutics)	PROCESS VALIDATION & CGMP	2018	<p>1. Acquire knowledge on various quality assurance systems, processes and current regulatory guidelines related to manufacturing and distribution.</p> <p>2. Address quality issues and provide solutions needed to attain Quality</p>

				<p>leadership in an environment of continual improvement.</p> <p>3. Understand the importance of effective documentation.</p> <p>4. To prepare professionally competent individuals with Quality concept being engrained to achieve global quality standards in pharmaceutical industries</p>
10.	MPH 203	Practical-I	2018	<p>1. Gain knowledge and acquire skills to prepare different types of tablets.</p> <p>2. Highlights the handling of different equipment's for the preparation and evaluation of various dosage forms</p>
11	MPH 204	Practical-II(BPT)	2018	<p>5. Compare and differentiate between compartmental and non compartmental analysis</p> <p>6. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms</p> <p>7. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data.</p> <p>8. Compare the bioequivalence of two drug prodcts</p>

12	MPH 205	BIO-PHARMACEUTICS & PHARMACOKINETICS	2018	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2018	<ol style="list-style-type: none"> 7. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 8. Learn about morals, values & work ethics. 9. Develop commitment 10. Learn about the different professional roles. 11. Ethical, social and environmental awareness 12. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2018	
15	MPH 301	Mid-Term Evaluation of Research project	2018	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work

				<p>undertaken.</p> <p>4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups.</p> <p>5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.</p>
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2018	<p>1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree.</p> <p>2. Projects offer the opportunity to apply and extend material learned throughout the program.</p> <p>3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken.</p> <p>4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups.</p> <p>5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.</p>

1.1.3 Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development

2019-2020

SVU COLLEGE OF ARTS

1. Adult & Continuing Education

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MAAE -1.1	Alternative Learning Systems	2019	<ol style="list-style-type: none">1. Remembrance of different forms of learning.2. Application of different technology support services for effective learning.3. Organization and administration of nonformal education programmes.4. Evaluation of nonformal education programmes.	
2	MAAE-1.2	Policy Studies In Adult/Continuing Education	2019	<ol style="list-style-type: none">1. Identify the socio-political movements during pre-independence period for the promotion of literacy.2. Analyze the trends of adult education programmes during post-independence period from social education to saakshar Bharat Mission.3. Describe the National and International organizations efforts for the promotion of literacy at various levels.4. Explain the State & Central Govt policies on adult education and special reference to literacy, post-literacy and continuing education.	
3	MAAE-1.3	Adult Psychology And Learning	2019	<ol style="list-style-type: none">1: Acquire knowledge on psychological foundations and its relevance to Adult Education and Learners.	

				<p>2: Learn classification of motives and motivation techniques to motivate the Adult Learner.</p> <p>3: Compare the Adult Personality & Child personality based on three Domain principles.</p> <p>4: Examine the Adult Learning characteristics and theories of learning, eventually he/she will apply all aspects in adult class room activity.</p>	
4	MAAE-1.4	Socio-Philosophical Foundatons Of Adult Education	2019	<ol style="list-style-type: none"> 1. Create thinking capacity to survival in the present society with philosophical approach. 2. Know great eminent leaders biography, sacrifices their lives for society. 3. Aware Dalit movement, women movement, co-operative movement in society especially rural areas. 4. Examine the problems of society with reference to bonded labor, child labour, untouchability, transgender and provide awareness on human rights. 	
5	MAAE-1.5	Communication Methods in Adult Education	2019	<ol style="list-style-type: none"> 1. Remembering the concept and methods of communication and their application to adult Education 2. Identifying different models of 	

				<p>communication.</p> <p>3. Describing the media of communication and their utility in continuing education.</p> <p>4. Realising the use of different Audio-visual aids in teaching learning process.</p>	
6	MAAE-1.6	Human Values And Professional Ethics-I	2019	<p>know the importance of professional ethics and to implement the ethical values in various professions.</p> <p>2. understand about the Good and bad values and to analyze the basic moral concepts.</p> <p>3. inculcate the students in the aspects of pursharthas .</p> <p>4. Know different crimes and its impact on personal and social life and theories of punishment</p>	
7	MAAE-2.1	Recent Trends In Adult And Continuing Education	2019	<p>.Identify the variations of literacy growth among States and Nation with reference to gender, rural and urban.</p> <p>2.Recognize the functions, activities of JSS and Saakshar Bharat Mission, to promote Life Long learning.</p> <p>3. Understand the five-year plan period programmes in terms of literacy, non-</p>	

				formal and functional literacy. 4. Examine the significance of the extension activities as third dimension of literacy programmes at field level.	
8	MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2019	<ol style="list-style-type: none"> 1. Remembering the meaning, foundations and theories of curriculum development with reference to adult learners. 2. Distinguishing different principles and approaches of curriculum development. 3. Interpreting the needs and interests of lifelong learners. 4. Executing to evaluate Adult Education programmes 	
9	MAAE-2.3	Research Methods In Adult Education	2019	<ol style="list-style-type: none"> 1. Understanding the concepts and methods of research. 2. Adopting the suitable sampling methods for research studies. 3. Developing tools for research studies. 4. Ability of research report writing. 	
10	MAAE-2.4	Field Work & Practical Assignments	2019	Application of knowledge and	

				<p>skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	
11	MAAE-2.5	Management Of Adult/Continuing Education	2019	<ol style="list-style-type: none"> 1. Know the principles of Management, Planning and Organizing capacity to conduct Adult Education Programmes. 2. Develop Social and Communication Skills to organize village, Mandal, District, State and Central level programmes. 3. Acquire project techniques for sustainable programmes. 4. Learn and enhance research skills to write project report, monitoring and evaluation of data of Adult Education Programme. 	
12	MAAE-2.6	Human Values And Professional Ethics-Ii	2019	Understand and recognize the importance of Value Education & Human Values and also try	

				<p>to follow the traditional values of family, women and elders in the society.</p> <p>2: Examine code of ethics for medical and health care professionals. They Can sensitize the rural people on Health Issues & Problems.</p> <p>3: Explain the Environmental Protection and relationship between Man and Nature, causes of pollution and impact on environmental health.</p> <p>4: Recognize the need of Social ethics and fight against the anti-social activities, Organ trade, Human trafficking etc.</p>	
13	MAAE-3.1	Training In Adult And Continuing Education	2019	<ol style="list-style-type: none"> 1. Identify the importance of training in Adult and Continuing Education programmes and differences between training and education. 2. Know the training methods, training materials to organize the Adult and Continuing Education programmes. 3. Follow the teaching methods like Lecture, discussion, demonstration and Role Play methods. 4. Recognize training facilities at different levels like National, State, District and Local. 	

14	MAAE-3.2	Comparative Studies In Adult Education	2019	<p>1: Compare the Adult Education Programmes of different countries based on its aims and significance.</p> <p>2: Compare and contrast of Adult Education movement and progress in different countries like UK, USA, Denmark etc with reference to India.</p> <p>3: Find out the similarities and dissimilarities of Adult Education Programs in selected countries.</p> <p>4: Identify the problems of Adult Education in terms of Planning, Organization and Budget activities in developing countries and India.</p>	
15	MAAE-3.3	Material Development For Adult And Continuing Education	2019	<ol style="list-style-type: none"> 1. Identify the significance of learning materials in Adult Education classes. 2. Design the teaching learning activity objectives for better performance of Teacher educator in Adult Education Programmes. 3. Enhance language forms and competence and tune with the needs of the learner. 4. Develop teaching learning materials for self-learning 	
16	MAAE-3.4a	Peoples' participation And Development	2019	<ol style="list-style-type: none"> 1. Analysing the role and functions of 	

				<p>people committees,</p> <ol style="list-style-type: none"> 2. Understanding the functions of Panchayat Raj institutions. 3. Knowledge on the role of co-operatives in rural development. 4. Ability to catalyse the performance of PRIs and co-operatives. 	
17	MAAE-3.4b	Vocational Education And Skill Development	2019	<ol style="list-style-type: none"> 1. Identify the relationships of Vocational Education and Adults development. 2. Understand the institution training importance and its practices in vocational training. 3. Identify the issues of Rural Vocational training in India and Asian Countries. 4. Provide Vocational Guidance and Counselling for Adult trainees. 	
18	MAAE-3.4c	Guidance And Counselling In Adult And Continuing Education	2019	<ol style="list-style-type: none"> 1. Remembering the concept and theories and perspectives of guidance and counselling in educational process. 	

				<ol style="list-style-type: none"> 2. Recollecting understanding and analysis of educational problems of a clientele group. 3. Knowing the roles and functions of guidance counsellor. 4. Analysing the use of computers and internet in guidance and counselling. 	
19	MAAE-4.1	Monitoring And Evaluation	2019	<p>Identify the concept of monitoring and monitoring systems in adult education</p> <ol style="list-style-type: none"> 2. Describe the different evaluation models. 3. Demonstrate the tools and techniques of evaluation. 4. Understand the importance of learner evaluation. 	
20	MAAE-4.2	Human Resource Development And Management In Lifelong Learning	2019	<ol style="list-style-type: none"> 1. Understand the importance of human resource development and its historical background. 2. Analyze the human capital and its functions in Adult Education. 3. Explain the cost benefit process and problems of measurements. 4. Identify the need of planning in human resource development and 	

				relation to Adult Education.	
21	MAAE-4.3a	Environment And Education	2019	<p>1. Understand the fundamental aspects of environment and need of environmental protection.</p> <p>2: Interpret the environmental crisis with reference to pollutions and its impact of human life need of Environmental Conservation.</p> <p>3: Know the environmental laws and role of individual and community to Control environmental pollution.</p> <p>4: Explain Ecology and eco factors for Ecological Balance.</p>	
22	MAAE-4.3d	Population Education	2019	<ol style="list-style-type: none"> 1. Recollecting the concepts, needs and importance of population related terminologies. 2. Analysing the causes and consequences of population growth. 3. Distinguishing the roles of different agencies in promotion of population education and control. 4. Identifying the different National population policies and influences 	

				fertility, mortality and migration.	
23	MAAE-4.4	Dissertation / Project Work	2019	<p>Application of knowledge and skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	

2. Ancient Indian History, Cultural Archeology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1	AIHC&A-304(B)	b) Social and Political Institutions in Ancient India	2019	<ul style="list-style-type: none"> ➤ The student will be able to understand the basic features of various theories and thoughts used in archaeological interpretations. ➤ They can formulate a research proposal and decide on appropriate materials and methods of analysis. ➤ They can present the findings and the process of conducting research in written and verbal formats. 	
2	AIHC&A-305(A)	a) Outlines of Indian History	2019	<ul style="list-style-type: none"> ➤ The non-history students as an external elective course become familiar in understanding the broad phases of Indian history and culture 	
3	AIHC&A-404(B)	b) India's Early Cultural Contacts with other Countries	2019	<ul style="list-style-type: none"> ➤ Cross regional cultural diffusion has been an important aspect of historical evolution. ➤ A strong and vibrating civilization having its impact felt upon other contemporary cultures has been a common phenomenon of history ➤ The students were able to understand the influence of Indian culture on Central Asia, south east asia, Japan, Tibet, Persia, Greece, Rome, Indo- China 	

3. Area Studies Programme

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1. 1	SEAP-104	ANCIENT INDIAN HISTORY UPTO 1206 A.D.	2019	<ul style="list-style-type: none"> 1) Students understand the causes for the spread of Indian culture in Southeast Asia. 2) Know the different Indian dynasties of the past in Southeast Asia. 3) Students will be able to learn the impact of Indian cultural on Southeast Asian societies 	
2.	SEAPS-203	REGIONAL GEOGRAPHY OF SOUTH PACIFIC AND EAST ASIA	2019	<ul style="list-style-type: none"> 1) Students identify physical setting, landforms, climate and soils of South Pacific. 2) Comprehend on Australia, New Zealand, Japan and China <p>Recognize the economic trends in South Pacific and East Asian nations</p>	
3.	SEAPS-303	INDIA AND THE WORLD	2019	<ul style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations. 	
4.	SEAPS-402	DEVELOPING BLUE ECONOMY	2019	<ul style="list-style-type: none"> 1) Develop an understanding of the rise of industrial economies like Singapore, Malaysia, Thailand and Indonesia. 2) Comprehend of the economies of Australia and New Zealand. 3) Ability to know the Regional Economic Groups like ASEAN, ESCAP, APEC and EAS. 	

TOURISM:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	T-102	PLANNING AND DEVELOPMENT OF TOURISM	2019	<ol style="list-style-type: none"> 1) Students understand geographical profile of different countries of Southeast Asia. 2) Know the trends in population movement within Southeast Asia. 3) Students will be able to assess location significance and various infrastructural developments. 	
2	T. 201	HISTORICAL APPLICATION OF TOURISM IN INDIA	2019	<ol style="list-style-type: none"> 1) Students list the Christian Missionary activities in Southeast Asian countries. 2) Knows the factors of Indian Emigration, and Chinese economic contribution in Southeast Asia. 3) Comprehensive grasp over different cultures and religions in Southeast Asia 	
3	T 301	TRAVEL AGENCY AND TOUR OPERATIONS MANAGEMENT	2019	<ol style="list-style-type: none"> 1) Students learn about the different political regimes in Southeast Asian nations. 2) Comprehend on the contemporary political and economic conditions in Southeast Asian countries 3) Analyse the reasons to address some of the questions of contemporary world politics 	
4	T 303	AIRLINE TICKETING AND INFORMATION MANAGEMENT	2019	<ol style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations. 	

4. Centre for Extension Studies

5. Centre for Gandhian Studies

6. Centre for Womens Sudies

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant document
1	SVUWS 206b	Familial values and Ethics	2019	<ul style="list-style-type: none">This course helps to define behavior in various situations, help youth make good choices, and solidify the bond of the family values.	
2	SVUWS-304D	Women's participation in Agriculture & Allied sectors	2019	<ul style="list-style-type: none">To understand the Role of Women in Agriculture and allied fields and Policies and Programmes for Women in Agriculture importance's in our country and to know the possible oppournities to create agri-business	

7. Econometrics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1	EMT 101	MicroeconomicTheoryI	2019	<ul style="list-style-type: none">• The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments.• The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face.• Microeconomics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms.• Microeconomics shows conditions under which free markets lead to desirable allocations.• The fundamental concepts of supply and demand, rational choice, efficiency, opportunity costs, incentives, production, profits, competition, monopoly, externalities, and public goods will help you to understand the world around you.	
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2	EMT 102	Macroeconomic Theory I	2019	<ul style="list-style-type: none"> • Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income, analyse the various income identities with government and international trade, define the concept of green accounting. • Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination. • Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyse the theories of absolute and relative income hypotheses. • Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI. CO5. Illustrate the meaning of interest, analyse the various theories of interest • The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more. The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance. 	
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3	EMT 103	MathematicalMethods	2019	<ul style="list-style-type: none">• Formulate mathematical models describing the dynamics of economic systems. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations.• Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm.• Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and cost.• Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations.• Students will get to learn applications of mathematical tools to economy.	
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4	EMT 104	Practical I	2019	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 Able to find Inverse of a Matrix, System of Simultaneous Linear Equations and Cramer's Rule method.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
5	EMT 105	StatisticalMethods	2019	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis.</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 formulate Statistical Methods describing the dynamics of economic systems such as production function analysis and solve econometric analysis of underlying data use with knowledge advanced econometric tools and techniques can solve easily.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
6	EMT 106	HumanValuesandProfessiona lEthics-I	2019	
7	EMT 201	MicroeconomicTheoryII	2019	<p>Course Objectives: The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. The factor prices</p>

8	EMT 202	Macroeconomic Theory II	2019	<p>CO1 The overarching goals of macroeconomics are to maximize the standard of living and achieve stable economic growth</p> <p>CO2 The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more.</p> <p>CO3 The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance.</p> <p>CO4 Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off.</p> <p>CO5 Objectives of Macroeconomic policies – Objectives of Monetary policy. New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.</p>	
9	EMT 203	Basic Econometrics	2019	<p>CO1 Adequate competency in the frontier areas of economic theory and methods.</p> <p>CO2 Formulation and estimation of a multiple regression model.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all models</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	

10	EMT 204	Practical II	2019	<p>CO1 Students can Identify Inter industrial relationships using Input-output analysis,</p> <p>CO2 analyse maximization of profits and minimization of costs can evaluate using Linear Programming,</p> <p>CO3 Analyse relationship of economic variables using simple and multiple regression models which are covered in basic Econometrics</p> <p>CO4 Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance</p> <p>CO5 They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.</p>	
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11	EMT 205	Mathematical Economics	2019	<p>CO1 Students can deal Mathematical calculation of static optimization, Application of Lagrange's method and also student can evaluate Differential Equations and with Economic Applications.</p> <p>CO2 Able to estimate and interpret Inter industrial relationships using Input-output analysis, also analyse maximization of profits and minimization of costs of the firms using Linear Programming method</p> <p>CO3 Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.</p> <p>CO4 Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market model with Stocks</p> <p>CO5 Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.</p>	
12	EMT 206	Human Values and Professional Ethics II	2019		

13	EMT 301	<i>Indian Economy</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources. Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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14	EMT 302	<i>Economics of Insurance</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicum in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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15	EMT 303	<i>Advanced Econometrics</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Concepts of Heteroscedasticity & Multicollinearity. Possible reasons behind the presence of Heteroscedasticity & Multicollinearity. Skill to judge the reliability of estimation in case of violation of basic assumptions for the application of ordinary linear regression method.</p> <p>CO2 Concepts of Autocorrelation reasons behind the presence of Heteroscedasticity & Multicollinearity. Describe the variance/covariance matrix for the regression errors under the assumption that the errors are correlated</p> <p>CO3 Apply modern econometric methods covering time series analysis, financial econometrics, microeconometrics, macroeconometrics and structural econometric modelling;</p> <p>CO4 Interpret and critically evaluate applied economics research literature; demonstrate programming skills and numerical methods; and</p> <p>CO5 Apply methods learned to address policy and business decision questions.</p>	
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16	EMT 304	<i>Computer Applications and Data Analysis</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will get basic knowledge of computers i.e., block diagram, evolution of computer, input/output devices, storing information in computer etc.</p> <p>CO2 At the end of this course student will gain Examine spreadsheet concepts and explore the Microsoft Office Excel environment. Import and export data.</p> <p>CO3 Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas. Perform analysis tasks using Data analysis pack</p> <p>CO4 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyses and conclude using SPSS Package</p> <p>CO5 Finally, student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	
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17	EMT 305	<i>Public Finance</i>	2019	<p>.</p> <p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Understand the sources of finance both public and private, demonstrate the role of government to correct market failures and possible advantage of public financing</p> <p>CO2 Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.</p> <p>CO3 Understand the possible burden, benefits and distribution of various types of taxes among various classes of people, know the general trend and impact on general welfare and arouse them to suggest good and bad tax system.</p> <p>CO4 Understand the needs of public borrowing from all possible sources to meet necessary public investment/expenditures. Also be alerted to find sources for repayment</p> <p>CO5 Deliver effectively the preparation of budget and how they are passed in the house. Understand the changes in size and flexibility of state and central budget along with the role played by Finance Commission.</p>	
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18	EMT 306	<i>Financial Institutions and Markets</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2 Effectively narrate the kinds and components of money with its regulatory system, be aware of the functions, objectives and limitations of commercial banks.</p> <p>CO3 Identify the existence and development of non-banking financial institutions, know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.</p> <p>CO4 Understand the conditions of financial markets and its impact in the economy</p> <p>CO5 Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p>	
19	EMT 307	<i>Practical III</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will gain Examine spreadsheet. Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas.</p> <p>CO2 Perform analysis tasks using Data analysis pack using MS-Excel.</p> <p>CO3 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyse and conclude using SPSS Package</p> <p>CO4 Student will able to test of Multicollinearity, Heteroscedasticity and Autocorrelation.</p> <p>CO5 Student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	

20	EMT 308	IntroductiontoEconometrics	2019	<p>CO1 students will have adequate competency in the frontier areas of economic theory and methods</p> <p>CO2 Use basic econometric estimation techniques such as Ordinary Least Squares to estimate bivariate and multivariate regression models.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all model.</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Students will acquire additional specialization topics are estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	
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21	EMT 309	IndianEconomy	2019	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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22	EMT 310	EconomicsofInsurance	2019	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicums in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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23	EMT 401	<i>International Trade and Finance</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Identify the basic difference between inter-regional and international trade, understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>CO2 Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>CO3 Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.</p> <p>CO4 Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.</p> <p>CO5 Be aware of the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.</p>	
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24	EMT 402	<i>Environmental Economics</i>	2019	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Realize the importance and influence of environment on the economy including the quality of manpower. Arouse their feelings to make cleaner environment so as to achieve harmonious development.</p> <p>CO2 Understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries.</p> <p>CO3 Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean.</p> <p>CO4 Understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of resources, careless or unscientific dump/management of wastes.</p> <p>CO5 Suggest appropriate measures to correct environmental degradation, aware of those ingredients such as healthy climate, quality of human beings, domestic and other natural habitats and biodiversity levels, productivity and productions, sustainability, etc are all influenced by environment.</p>	
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8. Economics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ECO-101 & 201	Micro Economics Analysis – I & II	2019	<ol style="list-style-type: none"> 1. Graduate Consulting Analyst. Graduate Recruitment Bureau. 2. Economic Consultant (Public Policy). 3. NERA Internship -Industry Research Analyst. Research

				Fellow. 4. Graduate Economic Consulting Internship, Economist, Customer Experience Strategy.
2	ECO-102 & 202	Macro Economics Analysis – I & II	2019	1. Work for a central bank of financial institutions. 2. Work as a consultants. 3. work in banking sector.
3	ECO-103&203	Public economics &Federal Finance	2019	1. Assistant commercial Tax Officers. 2. Industrial finance officers. 3. Bill collectors.
4	ECO-104&204	Mathematical Methods in Economics – I and Statistical Methods in Economics	2019	1. Assistant Statistical officers. 2. Bossiness firm consultant. 3. Market research Analyst. 4. Financial analyst. 5. Investment manager. 6. International trade specialist.
5	ECO 105(a)	Fundamentals of Computer	2019	1. Digital Assistants. 2. Office Computer operators.
6.	ECO 105(b)	Urban Economics	2019	1. Senior urban economist. 2. International urban Economist. 3. Senior program Research analyst. 4. Urban environmental impact officer.
7.	ECO 105(c)	Welfare Economics	2019	1. Policy maker. 2. Administrator. 3. Welfare officer in Sachivalyam. 4. Admin in Sachivalayam.
8.	ECO 106(a)	Economics of Environment	2019	1. Environmental pollution officer. 2. Environmental consultants. 3. Environmental pollution planning and consultants. 4. Environmental conservation / Advocacy.
9.	ECO 106(b)	Demography	2019	1. National Sample Survey officers. 2. Census Survey Officers. 3. Chief planning officers.
10.	ECO 107	Human Values and Professional	2019	1. The student will be enriched with several aspects

		Ethics -I		<p>pertaining to Human values and performing of Professional Ethics in day today life.</p> <ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
11	ECO 205(a)	International Trade: Theory and Policy	2019	<ol style="list-style-type: none"> 1. International trading officers. 2. Export and import Officers. 3. Shares consultants. 4. Commercial desk manager. 5. Global trade Advisory.
12	ECO 207	Human Values and Professional Ethics -II	2019	<ol style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	ECO 301	Economics of Growth and Development	2019	<ol style="list-style-type: none"> 1. Project Coordinator. 2. Recreation manager. 3. Programme Director. 4. Social and community manager.
18	ECO 302	Indian Economy	2019	<ol style="list-style-type: none"> 1. NSSO. 2. Economic Survey directors.
19	ECO 304 (a)	International Finance	2019	<ol style="list-style-type: none"> 1. Financial Advisors. 2. Financial officers.
23	ECO 304	Communication and Soft Skills	2019	<ol style="list-style-type: none"> 1. Skill development coordinators. 2. Public relation officers. 3. Marketing and Advertising. 4. Media.

				5. Meeting and event planning.
26	ECO 401	Rural Development	2019	1. MGNREGA Programme officers. 2. District Coordinators. 3. Institutional building officers.
27	ECO 402	Financial Institutions and Markets	2019	1. Corporate finance. 2. Financial planning officers.
28	ECO 403 (a)	India's Economic Reforms	2019	1. Planning & Development Officers
29	ECO 404 (c)	Entrepreneurship and Skill Development	2019	1. Business consultant. 2. Research and development. 3. Recruiter. 4. Sales managers.
30	ECO 404 (d)	Labour Economics	2019	1. Labour officers. 2. Labour relations officers. 3. Labour relations assistant. 4. Construction estimators
31	ECO 305 (c)	Economics of Insurance	2019	1. Insurance Agents. 2. Loan processor. 3. Loss control officers. 4. Risk managers.
33	ECO 405 (a)	Human Resource Development	2019	1. Human resource recruiter. 2. Performance management and development. 3. Employees training officers. 4. Organizational development officers.

9. Education

10. English

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1)	101:	Poetry-I	2019	<ul style="list-style-type: none"> • An understanding of the evolution of English poetry across ages. • May inspire poetic creativity 	
2)	102:	Drama-I	2019	<ol style="list-style-type: none"> 1. Perceive the nuances of performance 2. Recognize the transformation of human experiences into dramatic experiences. 	
3)		:Fiction-I	2019	<ol style="list-style-type: none"> 1. Aesthetic and literary merits of the novel 2. The conditions of the age and the influence 	
4)	104	:Prose-I	2019	<ol style="list-style-type: none"> 1. Understand the genre of essay 2. Imbibe the deeper human values implied in the essay. 	
5)	106:	Human Values and Professional Ethics-I	2019	<ol style="list-style-type: none"> 1. Realize the necessity of practicing Human values and Ethics in all walks of life including the profession they opt for 2. Understand Bhagvad Gita as a guide for modern lifestyle 	

6)	201	:Poetry-II	2019	<p>Sensitizes the students on the classical and contemporary poetic ethos</p> <p>Raises student awareness on movements like Modernism, War Poetry, Women's poetry, Symbolism etc,</p>	
7)	202	:Drama-II	2019		
8)	203	:Fiction-II	2019	<ol style="list-style-type: none"> 1. The great works of major novelist of modern age 2. The ability to understand the technique of the Novel 	
9)	204	:Prose-II	2019	<p>After the completion of the course the students are able to</p> <ol style="list-style-type: none"> 1. Know the working mechanism of Feminism and socialism 2. Know the mind and strategies of Victorian essayists 3. Know the importance of culture in the lives of Victorian people <p>Know the importance of being human in their dealings with the fellow beings</p>	
10)	205:	English Language Teaching	2019	<ol style="list-style-type: none"> 1. Understand the importance of language lab, teaching materials and audio-visual aids in the learning and teaching of English. 2. Know to test and testing components of language tests and examinations and evaluation procedures 	

11)	301	: Indian English Literature-I	2019	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the merits of Indian English writings and drawbacks if any 	
12)	302:	American Literature-I	2019	<ol style="list-style-type: none"> 1. An idea of English literature in America 2. Familiarity with the literary movements 3. Knowledge about concepts like Puritanism, transcendentalism, symbolism, impressionism etc 	
13)	303:	Literary Criticism-I	2019	<p>Equips the student with the evolution of English Literary Criticism from Aristotle to early twentieth century</p> <p>Helps students map the genealogy of Western canonical critical texts</p>	
14)	304 (A) 304(B): 304 (C): 305 (D):	:Comparative Literature Short Story Women's Writings Indian Literature in English	2019	<ol style="list-style-type: none"> 1. Understand national and world literatures and the need of comparative studies in the global world. 2. Understand the ways of comparative analysis <p>OUT COMES:</p> <p>Perceives creativity as a tool of empowerment and unity amongst women.</p> <p>Understand gendered spaces in creativity and the genealogy of women's writings like Indian, African American, French etc.</p>	

15)	305 (A):	Communicative English	2019	<p>.Understand the significance and importance of Communication in English in the present day world</p> <ol style="list-style-type: none"> 1. Understand communication process, the different types and barriers of communication 	
16)	305(B):	English for Media	2019	<ol style="list-style-type: none"> 1. Understand the use of language in different situations in writing for the media 2. Learn the oral skills necessary for media like interview skills 	
17)	05(C):	3An Introductory Course to Literature	2019	<ol style="list-style-type: none"> 3. Understand the use of language in different situations in writing for the media 4. Learn the oral skills necessary for media like interview skills 	
18)	401:	Indian English Literature-II	2019	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the poetic features of Indian English poetry 	

19)	404(A): 404(B): 404(C): 404(D):	Translation: Theory and Practice Subaltern Studies Post-Colonial Literatures World Classics in English Translations	2019	1. Know the concepts of dalitism, feminism, marginalism and Subaltern aspects with relevant theories 2. Appreciate and understand the struggles and sorrows of subalterns	
20)	405(A): 405(B): 405(C):	Soft Skills Indian Literature in English Translation Contemporary Translation Studies	2019	1. Will learn about morals and responsibilities 2. Learn to acquire the enduring values embedded in the great literary works of our writers	

Linguistics

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development	
1	101	Language and Linguistics	2019	i.The students are understanding concepts of language modes and semiotic approaches. ii.The student are enriched in structure and concept of language. iii. The student clearly expresses grammatical analysis and linguistics and other fields.	
2	304E	Anthropological	2019	I Understanding anthropological linguistics and	

		Linguistics		linguistic anthropology. ii. Identify ethnocentrism, ethnography in speaking and language ideology. iii. The students knows language and environment.	
3	305C	Linguistic Archaeology	2019	i.Understanding the definition and scope of linguistic archaeology ii.The student will enrich in basic method of synthesis of evidences of archaeology , linguistics folklore etc., iii. The student will able to explain historical linguistics and archaeology of South Asia.	
4	404E	Corpus Linguistics	2019	i.Understanding the history and scope of corpus linguistics. ii.Gained knowledge in textual and electronic corpora. iii. Familiar with corpus antonation and analysis.	
5	405C	Machine Translation	2019	i.Understanding history and problems of machine translation. ii.The students will able to understand approaches to MT. iii.The students are enriched in requirements for building MT systems and evaluation of MT systems.	

12. Hindi

13. History

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	HST 101	History of India Up to 650 A D	2019	<ul style="list-style-type: none"> ➤ Students will have a familiarity with the sources, different political, social, economic, cultural and religious traditions of the Indian subcontinent upto 650 C.E. ➤ Student will also be well versed with different analytical approaches and models of interpretation
2	HST 102	History of Indian Polity and Economy, 1206-1757	2019	<ul style="list-style-type: none"> ➤ Students can familiarize in understanding the continuity with changes in all spheres of history, polity and economy under the Delhi sultanates. ➤ Students can understand thoroughly the Mughal conquest of India, their rule, polity and legacy.
3	HST 103	History of Modern India, 1757 – 1947	2019	<ul style="list-style-type: none"> ➤ Student can gain knowledge on the English East India company rule and their reforms.
4	HST 104	History of Modern World, 1900-1945	2019	<ul style="list-style-type: none"> ➤ Student can gain the knowledge on the history and consequences of the World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism. ➤ Students will understand International Relations during 1919-39. ➤ Students can understand thoroughly about the Second World War and its impact.
5	HST 105 (A)	History of Andhra upto 1336 A D	2019	<ul style="list-style-type: none"> ➤ The study of comprehensive history of the country is incomplete without the study of regional history. ➤ Regional history is becoming more and more popular, for it has inherent potential of tapping varied kinds of sources for understanding the divergent aspects of local heritage and culture. ➤ The students can develop thorough

				understanding on Ancient Andhra history and culture.
6.	HST 105 (B)	History of World Civilizations	2019	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
	HST 106 (A)	Theoretical Concepts of Tourism	2019	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
7.	HST 106 (B)	History of Medieval World	2019	<ul style="list-style-type: none"> ➤ Student can gain thorough knowledge on the world in medieval ages and rise of Christianity ➤ Will understand Transition to Modern Age ➤ Possess knowledge on French Revolution and its Impact
8.	HST 107	Human Values and Professional Ethics-I.	2019	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large
9.	HST 201	History of India 650-1206 A D	2019	<ul style="list-style-type: none"> ➤ Students can develop comprehensive knowledge on political, social, economic, religious and cultural history of early medieval India , regional politics and its impact ➤ Can also able to understand the circumstances lead to the invasions of Arabs and foundation of Muslim rule in India

10	HST 202	Social and Cultural History of India, 1206-1757	2019	<ul style="list-style-type: none"> ➤ Students can gain comprehensive knowledge on the freedom movement from its inception upto independence in India ➤ The students can also able to understand the role of national congress and prominent leaders of national movement, problems and perspective in the progress of freedom movement
11	HST 203	Freedom Movement in India, 1857 –1947	2019	<ul style="list-style-type: none"> ➤ The students can understand the Cold War and its Impact ➤ Possess knowledge on UN and the Concept of World Peace ➤ Gain the knowledge on the Disintegration of Socialist Block
12	HST 204	History of Contemporary World, 1945-2000	2019	<ul style="list-style-type: none"> ➤ This course provides comprehensive knowledge on the last imperial political formation in South India and the history of Vijayanagara, Bahmani and contemporary pretty powers. ➤ It helps to understand with the context of polity, economy, culture, religious and ideological changes
13	HST 205	A) History of Vijayanagara Empire B) History of Modern Africa	2019	<ul style="list-style-type: none"> ➤ Students will be familiar with Road to Independence in Africa ➤ They will understand development and underdevelopment in Africa
14	HST 206	A) Historical Application of Tourism in India B) Women Studies in Modern India	2019	<ul style="list-style-type: none"> ➤ The students can familiarize the knowledge needed to excel in tourism activities. ➤ It will equip the students with the solid foundation to build upon the fundamentals, useful skills and expertise that can assist employment in Tourism Industry.
15	HST 207	Human Values and Professional Ethics-II	2019	<ul style="list-style-type: none"> ➤ The student can understand thoroughly the importance of Women Studies ➤ Will understand the role of Women in Hinduism and Islam ➤ Also gain knowledge about the Women

				participation in various movements in India
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14. Human Rights and Social Development

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HR 101	Human Rights: Concepts and Theoretical Perspectives	2019	<ol style="list-style-type: none"> To Expose the students about nature and concept of Human Rights. To apprise the students about the Liberal. Marxian perspectives. To expose the students that alternative, third world and Indian Perspectives of Human Rights,
2.	HR 102	Human Rights in India the constitutional and Legal Framework	2019	<ol style="list-style-type: none"> Students to know the Indian Constitution and Human Rights. To understand the Judiciary and Human Rights. To understand about Criminal Justice system in India.
3.	HR 103	Human Rights and Duties Education	2019	

				<ol style="list-style-type: none"> 1. To expose students about the importance of Human Rights and Duties education. 2. To apprise the students about the target groups for Human Rights <p>To expose the students about the content of Human Rights Education.</p>
4.	HR 104	Rights and the implementation Machinery	2019	<ol style="list-style-type: none"> 1. To expose the students about the implementation machineries at National Level and International Level. 2. The students understand about how the problems in Accessing Justice through Courts and Tribunals. 3. To expose the students that statutory bodies of Human Rights.
5.	HR 105 A	Working Class and Human Rights and Duties	2019	<ol style="list-style-type: none"> 1. <i>To understand the students about the status of working class, concept and issues.</i> 2. <i>To expose the student about the basic rights and duties of various sections.</i> 3. <i>To understand the Indian Constitutional Framework.</i>
6.	HR 105 B	Human Rights Education, Teaching and Training	2019	<ol style="list-style-type: none"> 1. To expose the student about the origin, UNO and Human Rights education policies. 2. To apprise the students about the principles and practice in teaching of Human Rights Education. 3. To understand the student about training

				aspects of Human Rights.
7.	HR 106 A	Human Rights Activism and Role of NGOs	2019	<ol style="list-style-type: none"> 1. To expose the students about the different types of Human Rights Activisms. 2. To identify the student that the different Types of NGO's and their role for promoting the Human Rights.
8.	HR 106 B	Social Movements and Human Rights in India	2019	<ol style="list-style-type: none"> 1. To expose the students about the role of NGOs for protecting human rights. 2. To Understand the student about the Political Movements, Ecological and Environmental Movements of Human Rights. 3. To apprise the student about the various types of Social and Political Reforms of Human Rights.
9.	HR 107	Human Values and Professional Ethics - I	2019	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i> 3. <i>To assess the student about various Crime and Theories of punishments</i>
10.	HR 201	Human Rights and Indian Polity	2019	<ol style="list-style-type: none"> 1. To expose the students about the concept of basic structure of Indian Polity, administrative structure in India. 2. To apprise the student about the role of

				<p>People's Agencies for protecting and promotion of human rights in India.</p> <p>3. To understand the students about the Legislative Procedure and implementation process in India.</p>
11.	HR 202	Emerging Dimensions of Human Rights	2019	<p>1. To expose the students about the Human Rights and Duties of Non-State Armed Groups and Commercial Corporations.</p> <p>2. To understand the students about the rights of future generation.</p> <p>3. To apprise the students about the Human Rights and Changing Dimension of State Sovereignty and Humanitarian' Intervention.</p>
12.	HR 203	Human Rights: The International Context	2019	<p>1. To understand the students about the evolution of human rights and UN charter of human rights.</p> <p>2. To expose the students about regional dimensions of human rights and special conventions on human rights.</p> <p>3. To understand the students about International conventions on human rights and duties.</p>
13.	HR 204	Research Methodology, Statics and Computer Applications	2019	<p>1) Student to Know Scope of Social Research.</p> <p>2) To Understand Data Analysis.</p> <p>3) Understand About Types of Data Collections</p>
14.	HR 205 A	Human Rights – The Socio Economic Context	2019	<p>1. To expose the students about the socio,</p>

				<p>economic background of human rights.</p> <ol style="list-style-type: none"> 2. To apprise the students about human rights of vulnerable groups. 3. To understand the students about the basic human need for development with respect to human rights.
15.	HR 205 B	Societal Problems of Human Rights in India	2019	<ol style="list-style-type: none"> 1. To understand the student about the societal problems of human rights. 2. To understand the students about the social problems of minorities, scheduled caste and scheduled tribes. 3. To expose the students about Regionalism, terrorism.
16.	HR 206 A	Human Rights and Criminal Justice System	2019	<ol style="list-style-type: none"> 1. To expose the students about Rights of Inmates of Prisons and Custodial Homes. 2. To understand the students about the Right to Legal Aid, Access to Justice and Speedy Justice. 3. To expose the students that the problems of human rights.
17.	HR 207	Human Values and Professional Ethics - II	2019	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i>

				<p>2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i></p> <p>3. <i>To assess the student about various Crime and Theories of punishments.</i></p>
18.	HR 301	Social Movements and Human Rights and Duties	2019	<p>1. To expose the student about conceptual perspectives of social movements and human rights.</p> <p>2. To apprise the students about the social, political and religious reforms movements and human rights.</p> <p>3. To expose the students that the role of International and National Institutions in promoting Human Rights.</p>
19.	HR 302	Science, Technology, Human Rights and Duties	2019	<p>1. Understand the basic concept in science and technology and also about Indian perspective on science and technology.</p> <p>2. Ability to know about the Right to Adequate Food, Agricultural, Biotechnology Impact of on Agriculture, Food Biotechnology and Revolution in Information Technology.</p> <p>3. Analyse know rights to health and application of Biotechnology in Medicine</p>

				<p>and also about Intellectual Property Rights.</p> <p>4. Assess the use of natural resource Environmental Biotechnology and Use Technologies</p>
20.	HR 303 A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2019	<ol style="list-style-type: none"> 1. To understand the students that the issues for peoples movements and public advocacy on human rights and duties 2. To understand the students on extension work with respect to human rights. 3. To understand the students about the uses of NGOs fact finding and uses of information media.
21.	HR 303 B	Socially/Economically Disadvantaged people and Human Rights and Duties	2019	<ol style="list-style-type: none"> 1. To expose the students about the concept of the Constitutional Safeguards and Special Protection Laws and Policies. 2. To understand the students about the concept of the disadvantaged people in the Indian Society. 3. To understand the students about the Institutional Mechanisms for protecting the human rights of the disadvantaged groups.
22.	HR 303 C	Human Duties and Responsibilities	2019	<ol style="list-style-type: none"> 1. To understand the student about the

				<p>concept of human duties and responsibilities.</p> <ol style="list-style-type: none"> 2. To expose the student about human values and values of humanism. 3. To apprise the students about evaluation of human duties.
23.	HR 303 D	Children and Human Rights and Duties	2019	<ol style="list-style-type: none"> 1. To understand the student about the concepts of Child Labour and protecting norms at National and International level. 2. To apprise the student that the status of children in Indian society with respect to human rights. 3. To understand the students about the National and International mechanisms for protecting the child rights.
24.	HR 304	Soft Skills	2019	<ol style="list-style-type: none"> 1. To understand the student that the concepts of soft skills with respect to human rights. 2. To understand the student in employability skills in human rights aspects. 3. To expose the students that the professional skills for team building and problem solving.
25.	HR 305 A	Historical and Philosophical Perspectives of Human Rights	2019	<ol style="list-style-type: none"> 1. To expose the student that the a basic understanding to the concepts of human rights, human values, dignity, justice and equality.

				<ol style="list-style-type: none"> 2. To understand the students that the theories of human rights in various inter disciplinary dimensions. 3. To apprise the student that the concept of Magna Carta-Bill of Right-French and American- Declaration and Uncharted on human rights.
26.	HR 305 B	Human Rights and Duties in India	2019	<ol style="list-style-type: none"> 1. To understand the students about the concepts of Constitutional Human Rights and Responsibilities. 2. To apprise the students that Extra-ordinary situations and human rights in India. 3. To understand the violations of rights in present Civil Society in India.
27.	HR 401	Human Rights in Andhra Pradesh	2019	<ol style="list-style-type: none"> 1. To expose the students about various Human Rights Movements at National and State Andhra Pradesh) Level. 2. To understand the concept of social stratification and problems of Caste and Un-touchability. 3. To expose the students that the gender inequality and various gender violation in Andhra Pradesh.
28.	HR 402	Development, Trade and Human Rights	2019	<ol style="list-style-type: none"> 1. To understand the student about the concept of human rights of various vulnerable groups ath National and International level. 2. To apprise the student about the Trade related human rights violations and Trade

				<p>development.</p> <p>3. To understand the student about the role of human rights in development.</p>
29.	HR 403 A	International, Humanitarian and Refugee Laws	2019	<p>1. To expose the students about the concepts of International Humanitarian Law and Implementation enforcements of IHL.</p> <p>2. To apprise the student about the concept of International Refugee Law and protection under International Law.</p> <p>3. To understand the students about solution to Refugee Problem.</p>
30.	HR 403 B	Environment and Human Rights and Duties	2019	<p>1. To expose the student about the concept of Environment and rights to clean environment.</p> <p>2. To apprise the students about the International regimes for protection.</p> <p>3. To understand the students about the role of various agencies for protecting environment with respect to human rights.</p>
31.	HR 403 C	Human Rights and Criminal Justice System	2019	<p>1. To expose the student about the concept of the International Human Rights systems.</p> <p>2. To understand the student about the International Organisations for protecting the Human Rights.</p> <p>3. To understand the students about the UN Organs and Human Rights.</p>

32.	HR 403 D	Minorities and Human Rights and Duties	2019	<ol style="list-style-type: none"> 1. To student understand that the concept of evolutionary perspectives and Institutional mechanisms for protection of Minorities. 2. To expose the student that rights and duties of Minorities under in the Indian System. 3. To apprise the student that the Minorities and human rights challenges.
33.	HR 405 A	Development, Globalization and Human Rights	2019	<ol style="list-style-type: none"> 1. Understand to role of Human Rights in Development and various theories of development. 2. Analyses the new international Economic Order (NIEO),WTO GATT and International Trade and Human Rights Perspective in India. 3. Evaluvate the Globalisation and its impact on agriculture, environment, labour, women, culture and health.

				4. Know about the Transnational Corporations (TNCs) and Human Rights violations and Impact of GATT-WTO on sovereignty.
34.	HR 405 B	Women and Human Rights and Duties	2019	<ol style="list-style-type: none"> 1. To expose the students about the concept or the status of women in various sectors with respective human rights. 2. To expose students about the National and International norms for protection at International and National level. 3. To apprise the students about the Institutional mechanisms for Protection of rights of women.

Human Rights and Duties

S.No	Programme Name	Programme Code	Course Name	Course Code	Year of Introduction	Description of the course addressing Professional Ethics
1	Human Rights and Duties	161	Human Values and Professional Ethics-I.	HR -106	2019	➤ Students can understand the need and importance of human values and professional ethics which are essential

						<p>for positive human behavior and actions in our daily lives.</p> <ul style="list-style-type: none"> ➤ They inspire the fundamental goodness of human beings and society at large.
2	HR -205	161	Human Values and Professional Ethics-II	HR -205	2019	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large.

15. Law

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CO -101	Mass Media Law	2019	<ol style="list-style-type: none"> a. Have a detailed and sophisticated understanding of the general principles governing freedom of speech, the public interest and the media; b. Have a detailed, technical and specialised understanding of the constraints imposed on the media in the reporting of court proceedings; c. Have developed the ability to independently understand, research and critically analyse legal and scholarly developments that contribute to professional practice in the area of media law; and

				<ul style="list-style-type: none"> d. Have a detailed, technical and specialised understanding of defamation law in India and comparatively; e. Have developed expert knowledge of the practical operation of defamation law in India and comparatively;
2	CO-102	Public Utilities Law	2019	<ul style="list-style-type: none"> a. government policy in regard to such utilities in general and to each utility in particular, b. The growth and evolution of the public utilities; c. patters of the laws of incorporation and d. powers, functions and liabilities of the public utilities vis-a-vis their employees, consumers and others.
3	CO- 103	Law and Social Transformation in India	2019	<ul style="list-style-type: none"> a. Critically analyse the Law as an instrument of social change and product of tradition and culture b. Explore the nature and function of Law as an institution and process interlinked with the social and economical philosophy of education. c. Examine development of law from historical processes and how for the a touch of modernization and value can be added to legal system d. To analyse the different approaches of Law and Justice
4	CO - 104	Indian Constitutional Law: The New Challenges	2019	<ul style="list-style-type: none"> a. Understand and interpret Constitution to address the emerging complex issues; b. Explore the various functional theories, doctrine and Constitutional principles working in the backdrop and its interplay with the emerging issues; and c. Examine the boundaries, limitations, of Constitution from different perspectives and explore the possible approaches of interpretation

				and understanding from the perspective of Law and Justice.
5	CO - 201	Union – State Finance Relations	2019	<ul style="list-style-type: none"> a. To understand India as development of complex federal structure (Quasi) federal and its strength and weaknesses; b. Explore the various functional theories, doctrine and Constitutional principles of federalism and its interplay under Indian Constitution; and c. To examine the area of conflicting interest between Union and State and primacy of Union over the State.
6	CO - 202	Constitutionalism, Pluralism and Federalism	2019	<ul style="list-style-type: none"> a. To explore the basic principles of Constitutionalism, different model of federalism and its interplay in the Indian legal system; b. To examine the adoption of, utility and justification of Constitutional model in India; and c. To analyse India as pluralist society and suitability of various model, approaches in India in functional aspects of comparison with other legal system.
7	CO – 203	Judicial Process	2019	<ul style="list-style-type: none"> a. Intended to highlight the role of court as policy maker, participant in the power process and as an instrument of social change. b. expose the intricacies of judicial creativity and the judicial tools and techniques employed in the process. c. Since the ultimate aim of any legal process or system is pursuit of justice, a systematic study of the concept of justice and its various theoretical foundations is required. d. Intends to familiarise the students with various theories, different aspects and alternative ways, of attaining justice.

8	CO – 204	Legal Education and Research Methodology	2019	<ul style="list-style-type: none"> a. Critically analyse the various research skill, especially in the field of law; b. To develop the skill of application of teaching methods in legal education c. To understand and analyse the various strength and weakness of teaching learning and research process for the field of law; and d. To develop the skill of utilising computer technology for Legal education and Legal research.
9	CO – 301	Human Rights	2019	<ul style="list-style-type: none"> a. Acknowledge the social and economic rights of workers, forced labour, child labour, bonded labour, slavery, trade union, social security, right to health, standard of living, protection of families etc. b. To gain and acquire the knowledge about cultural rights of indigenous population. c. Understand the third-generation solidarity right of various populations. d. Acknowledge the ideas and knowledge about Human right Protection system of United Nations in the light of Covenant of Civil and Political rights.
10	CO – 302	National Security, Public Order and Rule of Law	2019	<ul style="list-style-type: none"> a. Understand and interpret various provision and safeguards to protection national security; b. To explore the various approach of public order, importance of rule of law and different legislations; c. Balancing the civil liberties and power of state; and d. Explore the various functional institution like election commission, parliament and check and balance on the national importance.
11	CO- 303	Practical Training	2019	<ul style="list-style-type: none"> a. Critically apply the understanding and application of legal research principles to legal research writing; b. To explore the various stages and its application for

				<p>the practical record work;</p> <p>c. To have the development of idea, and its application;</p> <p>d. To have the ability to provide the original and non-plagiarised work to the existing field of knowledge</p> <p>e. Legal aid Camps and Legal Literacy Programmes, Court Observation work.</p> <p>f. On the completion of the course students will develop an inclination towards research and academics.</p>
12	CO- 304a	Environment Protection and The Law	2019	<p>a. Study the relationship between environment and climate change as well as the role of law, judiciary, resolution mechanisms but the alternate energy solutions and how people are dealing with climate changes, environmental laws and implementation of available solutions.</p>
13	CO- 304b	Intellectual Property Rights Law	2019	<p>a. To give philosophical underpinnings of traditional notion of property and IP •</p> <p>b. To examine the link between Industrial development & IP protection • To examine the conceptual development of IP concepts through judicial approach •</p> <p>c. To examine the impact of IP on economy, health and daily activities •</p> <p>d. To understand the basic principles enunciated in international agreements relating to IP</p>
14	CO- 401	Dissertation and Viva-Voce	2019	<p>a. Identify key research questions within the field of Demography on which you will carry out independent research.</p> <p>b. Manage your time effectively whilst working on your independent research.</p> <p>c. Demonstrate appropriate referencing and develop</p>

				<p>skills in other aspects of academic writing.</p> <p>d. Demonstrate knowledge and understanding of report writing.</p> <p>e. Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research</p>
15	CO – 402a	Law of Consumer Protection	2019	<p>a. Define provision under the Consumer Protection and Right to Information Act and apply them to situations accordingly</p> <p>b. Draft a consumer complaint with ease</p> <p>c. Confidently approach a Consumer Forum and get aware of the redressal mechanism</p> <p>d. To expose the students about Consumer Protection Laws;</p> <p>e. To develop the conceptual understanding of Consumer Protection regime.</p>
16	CO- 404 b	International Human Rights (MOOC / ONLINE COURSE)	2019	<p>a. Analyze and comment on key controversies surrounding the development of international human rights law</p> <p>b. Use conceptual tools to follow the developments of human rights law</p> <p>c. Be most effective in contributing to the enforcement of international human rights law</p>

16. Library and Information Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1	LIS-101	Foundation of Library and Information Science	2019	1.	<ol style="list-style-type: none"> 1. Know the various types of libraries and their role in the society 2. Learn the Professional ethics and library Legislation in India 3. Understand LIS education in India and various library associations in India
2	LIS102	Knowledge Organization:Classification Theory	2019		<ol style="list-style-type: none"> 1.. Understand the definition, need and purpose of classification 2. Learn the Fundamental Categories, Facet Analysis, types of Isolates in all schemes of classification 3. Understand the Notation, trends and developments in Classification
3	LIS-103P	Knowledge Organization:Classification Practice	2019		<ol style="list-style-type: none"> 1. Learn the Dewey Decimal Classification Scheme 2. Get the skill regarding assigning the class numbers 3. Have knowledge on Tables and Schedules of DDC
4	LIS-104	Knowledge Management	2019		<ol style="list-style-type: none"> 1. Get an idea on the concepts of knowledge management, types of knowledge 2. Understand the knowledge creation models, knowledge transfer in E-World

				3.know the tools for knowledge management and neural network and datamining
5	LIS-105	Introduction to Information Technology	2019	<p>1.Gain knowledge on the concepts of computer basics and Network technologies</p> <p>2.Understand the concepts of Operating Systems, Programming Languages and types of softwares</p> <p>3.Learn the Database Management systems, steps in development of databases and get an idea on different library software packages</p>
6.	LIS-106	Human Values and Professional Ethics-I	2019	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>

7.	LIS-201	Information Sources and Services	2019	<p>1.Learn documentary and non-documentary sources and different types of information sources</p> <p>2.Know about the Indian and British National Bibliographies, and Electronic Books</p> <p>3.Understand the virtual reference service and translation Services</p>
8.	LIS-202	Knowledge Organization: cataloguing Theory	2019	<p>1.Understand the basic ideas on catalogue, forms of the catalogue, Main Entry and added entries</p> <p>2. Know the Canons, Principles and Laws of Cataloguing</p> <p>3.Gain the knowledge on different types of subject headings, Cooperative and Centralized cataloguing</p> <p>.</p>
9.	LIS-203P	Knowledge Organization: cataloguing Practice	2019	<p>1.Gain knowledge on Anglo American Cataloguing Rules</p> <p>2.Learn the preparation of Main entry and added entries for monographs and serial publications</p> <p>3. Gain the skills on preparation of entries on cartographic materials, manuscripts and sound recordings</p>

10.	LIS-204P	Meta data Standards- Practice	2019	<p>1.Know the Metadata and its types, standards</p> <p>2. Learn the skills on KOHA Software</p> <p>3.Learn the skills on MARC 21 and Dublincore</p>
11	LIS-205	Library Management	2019	<p>1.Gain knowledge on meaning and purposeofmanagement, Organizational Structures</p> <p>2.Able to identify the factors behind selection, procurement and accessioning of documents</p> <p>3.Gain knowledge on a circulation system suitable for a library, different budgetary methods and its standards, norms and principles</p>
12	LIS-206	Human Values and Professional Ethics-II	2019	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	LIS-301	Information Processing and Retrieval Theory	2019	<p>1.Understand the basic concepts on Information procession and Retrieval and various schemes on classification</p> <p>2.Learn the Indexing Systems and Techniques and their Evaluation Criteria and Studies</p> <p>3.Gain knowledge on Web based Information Retrieval Systems</p>

14	LIS-302	Library Automation and Digital Library	2019	<p>1.Learn the basics of Library Automation, various modules of library automation software packages and their features</p> <p>2.Gain knowledge on basic concepts and characteristics of digital libraries</p> <p>3.Know about network and communication devices, digitization and metadata</p>
15	LIS-303	Search and Search strategies	2019	<p>1.Gain knowledge on search strategies, various types of databases, internet searching tools</p> <p>2.Understand Z39.50 protocol and Wide area information servers</p> <p>3. 3.Learn the search engines and meta search engines.</p>
16	LIS-304B	Internship	2019	<p>1.Attain skills on all types of sections and its maintenance in libraries in which they underwent training</p> <p>2.Get skills on maintenance of Digital Library</p> <p>3.Learn the skills on preservation and conservation of manuscripts and digitization.</p>
17	LIS-304C	Academic Library System	2019	<p>1.Know the basic objectives, growth and development of Academic Libraries in India, UK and USA</p> <p>2.Learn about an overview of higher education in India, UGC, its powers and functions and its role in the development of academic libraries</p> <p>3.Understand the total design of the building, techniques of financial management, and know the organization of library and information</p>

				services needed by distance learners and special users
18	LIS-305A	Information Literacy (OE)	2019	<ol style="list-style-type: none"> 1. Learn the concepts of Information Literacy and sources of Print and Electronic Information 2. Get the skills on information access through INFLIBNET Network 3. Able to understand the Internet and its search techniques and Intellectual Property Right
19	LIS-401	Research Methodology	2019	<ol style="list-style-type: none"> 1. Understand the definition, need and purpose of various research methods 2. Get the knowledge on Research design, techniques and tools 3. Gain the skills on Data analysis and Interpretation of Data in SPSS.
20	LIS-402P	Software for Libraries-Practice	2019	<ol style="list-style-type: none"> 1. Attain knowledge on D Space, Greenstone Digital Library Softwares 2. Learn about Koha : Library Management Software, E-Resources, Directory of Open Access Journals, 3. Get an idea on designing of Web Page and Data Mining
21	LIS-403	Dissertation/Project Work	2019	<p>.</p> <ol style="list-style-type: none"> 1. Gain Knowledge on how to select the theme for their work 2. Learn the writing styles, preparation of questionnaire, data analysis and interpretation and Citation styles 3. Get the skills on findings and conclusion in dissertation
22	LIS-403A	Management of Information System	2019	<ol style="list-style-type: none"> 1. Know the basic concepts in Management, and various methods of decision-making and its

				<p>application to Library and Information Centers</p> <p>2.Understand the budgeting techniques and methods and policies and procedures</p> <p>3.Gain knowledge on system analysis, PERT/CPM</p>
23	LIS -404C	Information Processing and Retrieval: UDC and Indexing Practice	2019	<p>1. 1.Gain knowledge on Universal Decimal Classification</p> <p>2.Learn different Indexing systems</p> <p>3.Understand the design and development of thesaurus</p>
24	LIS-405-B	Technical Writing	2019	<p>1.Know the definition and types of technical writing</p> <p>2.Attain the idea on technical writing process and styles</p> <p>3.Get the skills on technical writing techniques, use of MS-Office for preparation and presentation of technical writing</p>

17. Mass Communication & Journalism

18. Performing Arts(Music)

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	162	MA Performing Arts(Music)	2019	PAM-105 (P) Compulsory Foundation in Music -1 Clear cut training of foundation in Carnatic Music	Proof Enclosed

2	162	MA Performing Arts(Music)	2019	PA-M 204 (P) Vilambakala Kritis Training to Perform slow tempo songs which is difficult rather than fast tempo songs	Proof Enclosed
3	162	MA Performing Arts(Music)	2019	PA-M 205 (p) Compulsory Foundation in Music -2 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
4	162	MA Performing Arts(Music)	2019	PA-M 302 Compositions in Rare ragas widening knowledge to perform rare ragas	Proof Enclosed
5	162	MA Performing Arts(Music)	2019	PA-M 303 Concert Ability to plan and execute a successful Carnatic concert Ability to create self employment opportunity	Proof Enclosed
6	162	MA Performing Arts(Music)	2019	PA-M 402 Ragam Tanam Pallavi Learn and inculcate the most creative part of Carnatic Music To help student to shape out the creative rendering style of the student	Proof Enclosed
7	162	MA Performing Arts(Music)	2019	PA-M 403 Project work Introduce to the methodology of doing research in music and introducing to data collection, analysis etc and train up him to look into the facts based on evidences	Proof Enclosed
8	162	MA Performing Arts(Music)	2019	PA-M 404A Manodharma Sangeetha To enrich the knowledge of innovative music To educate the student to sing raga alapana neraval and Kalpanaswara which are the crucial Sections of creative music.	Proof Enclosed
9	162	MA Performing Arts(Music)	2019	PA-M 404C Compositions of Dance Repertoire Knowledge in application of music in other art fields like theatre, opera etc Knowledge to select and utilize ragas according to the theme and text.	Proof Enclosed

19. Philosophy

16.philosophy				
S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development


35.	101	Classical Indian Philosophy	2019	<p>1. The Student has applied the knowledge of classical Indian Philosophy.</p> <p>2. The Student has analyzed the principles of classical Indian Philosophy</p>
36.	102	Epistemology Indian	2019	<p>1. The Student has known the Indian Epistemology</p> <p>2. The Student has understood the Pramanas in Indian Philosophy</p>
37.	103	Logic Indian and Western	2019	<p>1. The Student has known the Indian Epistemology</p> <p>2. The Student has understood the Pramanas in Indian Philosophy</p>
38.	104	Western Philosophy- Greek and Medieval	2019	<p>1. The Student has known the important issues of Western Philosophy</p> <p>2. The Student has understood the Principles of greek and medieval Philosophy</p>
39.	105-A	Problems in Metaphysics	2019	<p>1. The Student has known the Problems of Metaphysics</p> <p>2. The Student has understood the Principles of Metaphysics</p>
40.	202	Ethics- Indian	2019	<p>1. The Student has known the Ethics in Indian</p>

				<p>Philosophy</p> <p>2. The Student has understood the various Ethical Principles in Indian Ethics.</p>
41.	203	Ethics –Western	2019	<p>1. The Student has known the Ethics in Western Philosophy</p> <p>2. The Student has understood the Ethical theories of Western Philosophy</p>
42.	204	Modern Western Philosophy	2019	<p>1. The Student has known the Problems of Modern Western Philosophy</p> <p>2. The Student has understood the thoughts of Modern Western Philosophers.</p>
43.	205-A	Philosophy of Education	2019	<p>1. The Student has known the Contents of Philosophy of Education.</p> <p>2. The Student has understood the Educational aspects of Philosophy of Education</p>
44.	207	Audit course (HVPE)	2019	<p>1. The Student has known the essence contents of human values.</p> <p>2. The Student has understood the Professional Ethics..</p>
45.	301	Social and Political Philosophy	2019	<p>1. The Student has known the contents of social Philosophy.</p> <p>2. The Student has understood the Principles of Political Philosophy.</p>
46.	302	Philosophy of Vedanta	2019	<p>1 . The Student has known the Philosophy of Vedanta.</p> <p>2. The Student has understood the Philosophical Doctrines of Vedantas</p>

47.	303-A	Philosophical Approach to Gandhi	2019	<p>1. The Student has known the metaphysical issues of Gandhi.</p> <p>2. The Student has understood the Gandhian Philosophy</p>
48.	303-B	Philosophy of B.R.Ambedkar	2019	<p>1. The Student has analyzed the Philosophy of Ambedkar..</p> <p>2. The Student has applied the Philosophical aspects of Ambedkar.</p>
49.	305-A	Philosophy of Value Education	2019	<p>1.The Student has known the importance of Education...</p> <p>2. The Student has understood the Philosophical values for life.</p>
50.	305-B	Sri Venkateswara Studies	2019	
51.	401	Phenomenology and Existentialism	2019	<p>1. The Student has analyzed the contents of Phenomenology..</p> <p>2. The Student has applied the Philosophical Principles of Existentialism</p>
52.	402	Comparative Religion	2019	<p>a.The Student has analyzed the aspects of Comparative Religion..</p> <p>b. The Student has applied the Philosophical Principles of different Religions</p>
53.	403-A	Philosophy of Jiddu Krishnamurti	2019	<p>1.The Student has known the Philosophy of Jiddu Krishnamurti...</p> <p>2. The Student has understood the Philosophical insights and of jiddu Krishnamurti</p>
54.	403-B	Analytical Philosophy	2019	<p>1. The Student has known the contents of Anaytical</p>

				Philosophy. 2. The Student has understood the Philosophy of Philosophers of Analytical Philosophy..
55.	403-C	Sri Vaishnavism	2019	1.The Student has analyzed the aspects of SriVaishnavism.. 2. The Student has applied the Philosophical Principles of .SriVaishvaism
56.	403-D	Research Methodology and Computer Applications	2019	1.The Student has analyzed the principles of Research Methodology.. 2. The Student has applied the computer operating and applying principles
57.	404	Philosophy of Peace	2019	
58.	405-A	Philosophy of Yoga	2019	1.The Student has analyzed the principles of Research Methodology.. 2. The Student has applied the computer operating and applying principles

20. Physical Education

S.No	Name of the Course	Course Code	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	B.P.Ed	Bachelor of Physical Education	2014-15	100%	 B.P.Ed students employibility .pdf
2	Ph.D	Ph.D	2008	100%	

21. Political Science & Public Administration

22. Population Studies

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	PS- 101	Population Characteristics and Theories	2019	<ol style="list-style-type: none">i. Identify basic demographic concepts and definitions in Population studiesii. Impart knowledge on Population trends in size and growth of population at regional, national and global level.iii. Discover the implications of different theories on past and present population components with special reference to Malthusian theory
2.	PS - 102	Fertility	2019	<ol style="list-style-type: none">i. Examine the basic concepts and measurements of fertilityii. Assess, compare and contrast trends in fertility and its determinantsiii. Familiarize the concepts of nuptiality and factors affecting nuptiality
3.	PS – 103	Mortality	2019	<ol style="list-style-type: none">i. identify the various concepts and measures of mortalityii. Examine the global levels and trends in mortality and its determinantsiii. Acquire knowledge on techniques of life tables, constructions of multiple-decrement life table and computational aspects for demographical analysis
4.	PS 104	Sources, Evaluation and Adjustment of Data	2019	<ol style="list-style-type: none">i. Examine and compare merits and demerits of various sources of population dataii. Understand the evaluation of data, factors affecting completeness of dataiii. Reproduce knowledge on population projections,

				calculations and applications
5.	PS – 105	Population Education and Extension	2019	<ul style="list-style-type: none"> i. Examine the components of population education and create awareness on population education among the students and youth ii. Acquire skills to organize Extension Programmes in population education at school, college and Non formal educational levels iii. demonstrate training on population education methods and techniques in order to create awareness on population education
6.	PS - 106	Human Values and Professional Ethics-I	2019	<ul style="list-style-type: none"> i. Identify the concepts of ethics and its relation to religion, politics and environment ii. Memorize the different aspect of values and interpret the best skills in understanding the merits of value related aspects iii. Demonstrate to interpret crime and theories of punishment with special reference to acquire knowledge on Manu and Yajnavalkya
7.	PS – 201	Migration and Multi Regional Demography	2019	<ul style="list-style-type: none"> i. Explore the different types and trends in migration ii. Apply skills in measurement, causes and consequences of different migrations in different regions iii. Explore the theories and recommend suitable policies of migration
8.	PS – 202	N.G.O Management & Field Work Orientation	2019	<ul style="list-style-type: none"> i. Understand the role, importance and establishing of NGO ii. Explore the sources of funding of NGO's at national and international level iii. Explore demographic data by working with individuals, groups and communities
9.	PS - 203	Statistical Methods	2019	<ul style="list-style-type: none"> i. Familiarize the basic statistical methods and its applications to demographic data

				<ul style="list-style-type: none"> ii. Demonstrate knowledge on methods and techniques of sampling iii. Acquire skills in processing of data with computer
10.	PS - 204	Population Sociology	2019	<ul style="list-style-type: none"> i. Examine the basic sociological concepts, and evaluate the relationship of sociology to other social sciences ii. Identify the social institutions, social change and socialization iii. Explore the sociological theories of fertility and its application in contemporary society
11.	PS - 205	Fundamentals of Social Work	2019	<ul style="list-style-type: none"> i. Memorize the basic concepts of social work and its nature and scope. ii. Recognize the different methods of social work iii. Explore the social work practice in different fields iv. Acquire knowledge on the evolution of social work in India v. Explore the professional associations and importance of networking in social work profession
12.	PS – 206	Human Values and Professional Ethics - II	2019	<ul style="list-style-type: none"> i. Acquire and gain knowledge on different concepts of human values and behavioural changes. ii. Recognizing the medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics of medical and health care professionals. iii. Acquire skills on environmental ethics and its relation to Health
13.	PS - 301	Population Geography	2019	<ul style="list-style-type: none"> i. Enumerate the geographical factors affecting the distribution of population ii. Awareness and understanding of trends in urbanization and its impact on ecological imbalance, global warming, greenhouse effects.

				<ul style="list-style-type: none"> iii. Able to assess changing pattern of land use, conservation of resources and critical thinking of policies, programmes for better management of environment
14.	PS - 302	Research Methodology	2019	<ul style="list-style-type: none"> i. Demonstrate in conducting population research and surveys ii. Prepare research design and apply sampling techniques iii. Discover skills in methods and tools of data collection, data analysis, interpretation, and report writing.
15.	PS - 303	Community Health	2019	<ul style="list-style-type: none"> i. Discover comprehensive knowledge on concepts of community health, illness, disease prevention ii. Critical thinking on epidemiology, communicable diseases and its prevention iii. Understand and appreciate the concepts of health, nutrition, balance diet, nutrition deficiency diseases and National Health Programmes
16.	PS – 304 a	Population Psychology	2019	<ul style="list-style-type: none"> i. Appreciate the scope of psychology and the relationship between value of children and fertility ii. Familiarize and comprehend the significant psychological theories relevant to fertility and contraceptive behavior iii. Demonstrate leadership and effective communication skills in promoting health and family planning
17.	PS – 304 b	Population Policies and Programmes	2019	<ul style="list-style-type: none"> i. Explore population policies related to fertility, mortality and migration ii. Acquire the knowledge on methods of family planning and acts relating to medical termination of pregnancy, age at marriage and also registration of vital events

				iii. Apply best practices and strategies for promoting family welfare programme.
18.	PS – 304 c	Gerontology	2019	<ul style="list-style-type: none"> i. Understand the scope of gerontology and demographic dimensions of the elderly ii. Critically explore and analyze changes in status of elderly health, problems and needs of elderly iii. Acquire skills in dealing elderly issues like neglect, abuse, violence and abandonment caregivers stress and elderly neglect
19.	PS – 304 d	Population and Sustainable Development	2019	<ul style="list-style-type: none"> i. Examine the concepts and theoretical issues relating to sustainable development and sustainable goals ii. Assess and measure the quality of life, resource creation, and management and distribution iii. Critically think of the relationship between population, environment, poverty and population sustainable growth
20.	PS-305 a	Principles of Population Studies	2019	<ul style="list-style-type: none"> i. Explore the components of population change, trends in size and growth of population ii. Discover the concepts of fertility, mortality and migration iii. Acquire skills in exploring the sources and quality of data on fertility, mortality and migration
21.	PS – 305 b	Population, Society and Environment	2019	<ul style="list-style-type: none"> i. Understand the components of population change and sociological consequences ii. Demonstrate sociological perspective to analyze the relationship between man, ecology and environment iii. Critical thinking of Sustainable development and its concepts
22.	PS - 401	Communication for Family Welfare Programmes	2019	<ul style="list-style-type: none"> i. Examine the elements in communication process ii. Understand and apply different approaches to communication

				iii. Critically analyze and apply factors influencing a various communication methods to promote family planning
23.	PS – 402	Reproduce Health and Adolescent Issues	2019	<ul style="list-style-type: none"> i. Examine the anatomy and physiology of human reproduction, conception and pregnancy ii. Describe the male and female reproductive health problems iii. Assess and examine various adolescent issues
24.	PS - 403	Population Growth and Development	2019	<ul style="list-style-type: none"> i. Understand the indicators of development with special reference to population growth and development. ii. Discover the concepts of economic inequality and its causes iii. Examine the status of women and development and demographic consequence of women empowerment
25.	PS – 404 a	Dissertation	2019	<ul style="list-style-type: none"> i. Develop in-depth knowledge of field work and community surveys ii. Acquire the skills to present and discuss the findings through seminars iii. Explore the skills in preparation and presentation of research findings
26.	PS – 404 b	Demography of Andhra Pradesh	2019	<ul style="list-style-type: none"> i. Acquire knowledge on basic trends and changes in population growth in Andhra Pradesh ii. Examine the migration and urbanization, problems of slums and related policies with special reference to Andhra Pradesh iii. Explore the population policies and programmes in Andhra Pradesh
27.	PS – 404 c	Social Work in Industry and Human resource Management	2019	<ul style="list-style-type: none"> i. Understand the concepts, principles and functions of Management ii. Acquire skills on difference process of Human

				<ul style="list-style-type: none"> iii. Resource management iii. Demonstrate the organizational behavior, management conflicts and organization of interventions iv. Concepts of Industrial relations and related legislations for industrial workers
28.	PS – 404 d	Health Economics	2019	<ul style="list-style-type: none"> i. Explore the concepts in economics in relation to health and population dynamics ii. Acquire skills in assessing costing and health economics iii. Critically analyze and evaluate general health status and quality of life and also measurement of health outcomes
29.	PS – 405 a	Rural, Urban, Tribal Development	2019	<ul style="list-style-type: none"> i. Explore the characteristics of rural, urban and tribal community ii. Discover community development and experiment projects in rural, urban and tribal areas iii. Critically examine and understand the issues related to rural, urban and tribal areas and approaches to community development
30.	PS – 405 b	Social policies and planning	2019	<ul style="list-style-type: none"> i. Discover social policies in relation to Indian constitution. ii. Examine the approaches to social policy iii. Demonstrate and analyze various social policies and their implementation

Masters in Social Work

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1.	MSW- 101	Sociology for Social Work	2019	<ul style="list-style-type: none"> i. Discover basic concepts in Sociology and examine

				<p>the relation between individual and society.</p> <p>ii. Distinguish between Socialization, Social institutions and Social groups</p> <p>iii. Critically demonstrate , Social Stratification, Social Deviance, Social Change and Social Problems</p>
2.	MSW - 102	Human Growth and Personality Development	2019	<p>i. Memorize various stages of Human Growth and Development</p> <p>ii. Identify different concepts of Human Behavior like Motivation, Perception, Learning and Attitudes</p> <p>iii. Discover experience in assisting the person in Solving their Psycho social problems through personality development and adjustment</p>
3.	MSW – 103	Social Work Profession & Field Work Orientation	2019	<p>i. Recall various concepts like Social Service, Social Welfare, Social Development and Social Work</p> <p>ii. Experiment on Ethical Values of Professional Social Work and analyze current trends in Social Work</p> <p>iii. Design field work in Social Work and acquire skills to involve the client in problem solving process</p>

4.	MSW 104	Social Work Practice with Individuals & Groups	2019	<ul style="list-style-type: none"> i. Recognize the basics Concepts , Techniques and Skills of case work ii. Apply different approaches of Case Work, Group Work iii. Evaluate the application of Social Case Work and Group Work at various settings like Schools, Hospitals, and Correctional Settings and in Communities.
5.	MSW – 105	Social Work Practicum - I	2019	<ul style="list-style-type: none"> i. Recognize the significance of Social Work in various settings ii. Illustrate the application of Social Work Methods in the agencies during their field practicum iii. Examine the applications of Social Work Principles and Skills in the functions of different organizational systems
6.	MSW - 106	Human Values and Professional Ethics-I	2019	<ul style="list-style-type: none"> i. Familiarize the concepts of ethics and its relation to Religion, Politics and Environment etc. ii. Able to gain knowledge on different aspect of Values and Interpret the best Skills in understanding the merits of value related aspects iii. Discover to interpret Crime and Theories of Punishment with special reference to Manu and

				Yajnavalkya
7.	MSW – 201	Social Work Profession & Field work Orientation	2019	<ul style="list-style-type: none"> i. Recognize the Scope, Importance and Significance of Social Work Practice in different fields ii. Acquire Knowledge and Skills Essentials for Working with Groups and Communities iii. Formulate Capacity Building by organizing training and awareness programmes in the Field Work Settings
8.	MSW – 202	Social Work Practice with Communities	2019	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Community organization and Social Work practice ii. Appraise various approaches in Community Organization and Current issues in Community Organisation iii. Organize community participation using PRA methods and techniques
9.	MSW - 203	Social Action and Social Legislation for Social Work Practice	2019	<ul style="list-style-type: none"> i. Distinguish the elements of Social action, Models and Process of Social Action ii. Connect the Social Legislations with Social Work Practice iii. Appraise Laws pertaining to Women, children and Aged in Social work practice
10.	MSW - 204	Social Policy and Planning	2019	<ul style="list-style-type: none"> i. Examine the nature and Approaches of Social

				<p>Policy in the Socio-economic and political context</p> <p>ii. Assess the implementation of Social Welfare Policies in Education, Health, Women, Children and Environment</p> <p>iii. Examine the Role of Social Workers in Formulating , Planning and Implementation of Social Policies</p>
11.	MSW - 205	Social Work Practicum-II	2019	<p>i. Examine the Nature, Scope and Functions of the different Government and non-profit organizations agency at ground level</p> <p>ii. Trained to assist their supervisor with in the limitations of the agency</p> <p>iii. Equipped with Professional Skills and Techniques through practical exposure</p>
12.	MSW – 206	Human Values and Professional Ethics - II	2019	<p>i. Summarize different concepts of Human Values and Behavioural changes required for adjustment in Family and Society</p> <p>ii. Demonstrates Medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics in Medical and Health care professionals.</p> <p>iii. Acquire Skills on Environmental ethics and the</p>

				Environment and Health
13.	MSW - 301	Social Work Intervention with Families	2019	<ul style="list-style-type: none"> i. Discover the Family Centered Practice as a Model of Social Work practice and understand Family life management and Family Dynamics ii. Demonstrate Family Assessment and Application of Tools : Interviewing , Ecological assessment – Eco map , Generation assessment- Genogram, Triangle, Family Sculpture and Family Mapping iii. Integrate social work practice with Families and Social Work Therapeutic Interventions wherever appropriate
14.	MSW - 302	Social Work in the Field of Health	2019	<ul style="list-style-type: none"> i. Examine the concept of Health, factors affecting health and Indicators of Health. ii. Evaluate Primary and Community healthcare services with special references to communicable and Non-communicable diseases iii. Assess the relevance, domains and nature of Social Work Intervention in different Health settings.
15.	MSW - 303	Counseling in Social Work Practice	2019	<ul style="list-style-type: none"> i. Understanding the basics of Counseling and Approaches of Counseling

				<ul style="list-style-type: none"> ii. Develop ability to apply appropriate Counseling Techniques with Special Group iii. Demonstrate to apply Counselling Skills while working with clients in various settings like Health ,Family and School Settings
16.	MSW – 304 a	Social work Research	2019	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Social Work Research process and Statistics ii. Illustrate single subject and evaluation Research Designs along with various Research designs iii. Facilitate methods of Sampling, Data Collection, Analysis, Statistical-Applications and Report Writing
17.	MSW – 304 b	Gerontological Social Work	2019	<ul style="list-style-type: none"> i. Identify theScope of Social Work in the field of Gerontology. ii. Illustrate Changes in the status of Elderly, Health problems and needs of Elderly. iii. Experiment the social work interventional strategies to Elderly ,Care givers and Counseling
18.	MSW – 304 c	Social Work Practicum-III	2019	<ul style="list-style-type: none"> i. Analysis the role of Community and dramatize the Community Organisation in field work practice ii. Develop skills and expertise their Field Work exposure to organize community programmes

				<ul style="list-style-type: none"> iii. Examine the new Intervention programs in the area of their specialization to bring a solutions to the problems in different community
19.	MSW – 304 d	Human Rights and Social Legislation	2019	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Human rights ii. Distinguish various Social Legislations and Legislations related to Women and Children iii. Nurture the Social Work Professionals by creating awareness on various current issues and related Legislations
20.	MSW-305 a	Principles of Population Studies	2019	<ul style="list-style-type: none"> i. Demonstrate the concept of Population Studies, Components of Population Change Population Structure ii. Interpret basic concepts and measures of Fertility, Mortality ,Mobility and Migration iii. Critically evaluate the Concept of Multi Regional Demography, its uses and limitations
21.	MSW – 305 b	Fundamentals of Social Work	2019	<ul style="list-style-type: none"> i. Examine basic concepts, Principles and Methods of Social Work ii. Defend values and Principles of Professional Social Work and Code of ethics for Social Workers

				<ul style="list-style-type: none"> iii. Evaluate Social Work Education in India, Professional Associations, Problems of Professionalization and Networks in Social Work
22.	MSW - 401	Social Work Intervention with Children	2019	<ul style="list-style-type: none"> i. Examine the Significance and Development of Child Welfare Services with special reference to Child Rights ii. Appraise various Institutional and Non-Institutional services for children in need iii. Create Professional Knowledge on Social Work Intervention with children in difficult situations
23.	MSW – 402	Rural/Urban/Tribal Development & Empowerment –I	2019	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in rural Urban and Tribal community and Community Development Projects across the country ii. Trained to meet the challenges specifically related to Rural, Urban and Tribal communities iii. Will nurture the Social Work Professionals to become effective Social Worker and contribute to community by conducting awareness camps, strengthening Self-Help Groups and Facilitating Empowerment in the communities.
24.	MSW - 403	Social Work in the Field of Mental Health	2019	<ul style="list-style-type: none"> i. Understand the concept and importance of Mental Health and Psychiatric Social Work

				<ul style="list-style-type: none"> ii. Distinguish Psychiatric disorders and application of Therapeutic Interventions in Psychiatric Illness iii. Plan to provide Psychiatric Rehabilitation to assist Mentally Ill patients
25.	MSW – 404 a	Social Work in Industry & Human Resource Management	2019	<ul style="list-style-type: none"> i. Enrich knowledge on HRM, Personnel management, HR planning and ii. management systems iii. Appraise organizational behavior, conflict Resolution Strategies and Legislation related to industrial relations iv. Develop skills in Industrial Social Work Practice and the role and significance of Corporate Social Responsibility
26.	MSW – 404 b	Social Work Practicum-IV	2019	<ul style="list-style-type: none"> i. Acquires training in the organization as social worker and develop sound knowledge on social work which will motivate them to start an NGO ii. Evaluate projects and organize programmes for fund raising iii. Hypothesize research in their area of specialization through which they can suggest recommendations to agencies for improving quality
27.	MSW – 404 c	Social Work Practicum-V	2019	Learn Skills and able to apply Principles during the

				<p>Internship in Block Placement</p> <p>Explore research studies at Micro levels and submit reports as Mini Project Work</p> <p>Demonstrate as effective Social Worker in the agency in which they are placed</p>
28.	MSW – 404 d	Social Work and Disaster Management	2019	<ul style="list-style-type: none"> i. Summarize and understand the disasters and Disaster Management ii. Acquire a critical perspective of the policy framework, Institutional Structures and programmes for Disaster Management in India iii. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management
29.	MSW – 404 a	NGO Management	2019	<ul style="list-style-type: none"> i. Distinguish the Concept, Structure, Registration and By laws of NGOs ii. Demonstrate Organisational Management and source of funding of NGOs iii. Familiarize to organize Human Resource Management in NGOs
30.	MSW – 404 B	Health Education	2019	<p>Discover the Roles, Responsibilities, Approaches and ethics in Health Education</p> <p>Describe the Behavioral, Environmental, and Genetic risk factors for Communicable and Non- communicable</p>

				diseases. Evaluate channels of Health education and organizational health set up at Central, State and District levels
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23. Sanskrit

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	SNSKT 101	Elements of Darsanas-I	2019	An understanding of the evolution of Darsanas I.To create an awareness of the Darsanas ii.Acquire Knowledge of the Baudda and Jaina Darsanas iii.To get the Knowledge of Meemamsa Sastra
2	SNSKT-102	Vedic Texts-I	2019	I.Students able to get the Vedic knowledge II.Students know the importance of Vedic gods III.Students are understanding the Vedic chandas IV.To make understanding the spiritual knowledge through Kathopanishat
3	SNSKT-103	PROSE AND POETRY-1	2019	I.An understanding of evolution of Sanskrit poetry across the ages until the modern age II.Get the knowledge of gadya kavya III.Understand the poetical skills IV.Understand the importance of kiratarjuneeya in Sanskrit literature
4	SNSKT-104	DRAMA, ALANKARA AND PROSODY -1	2019	Student will be able to get I.Understanding the features of Sanskrit drama II.Knowledge of organ and development of Sanskrit dramas III.Understanding the efficiency of kalida's poetic skill. IV.Get the knowledge of chandas V.Get the knowledge of different types of chandas
5	SANSKT105	HISTORY OF	2019	After completed of course the students are able to

	(A)	SANSKRIT LITERATURE – 1		I.Know the origin and development of Sanskrit literature II.Know the importance of Vedas and its date. III.Know the meaning and contest of Brahmanas, Aranyakas and Upanishads IV.Know the social conditions as reflected in the Brahmanas V.Know the importance of Ramayana and its date
6.	SANSKT :10 5(B)	DRAMA AND POETRY -1	2019	I.Students will be able to gain understanding the features of Drama, Sentiment Moralities II.Through understanding the importance and place of Rasa in the Drama III.The knowledge about the skillfulness of Bhavabhutis Dramatergy IV.Recognize the transpiration of human experiences into dramatic experiences V.The knowledge about importance of Sandesa Kavyas in Sanskrit Literature
7.	SANKT :105 (C)	ALANKARA AND PROSODY - 1	2019	I.Students will understand the different types of Alankara II.Know the importance of Alankara in the poetry III.Understand the development of on the basis of similar IV.Recognize the Guru and Laghu in prosody V.Know the importance of melody through prosody
8.	SANSKT:10 6(A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KOUMUDI- 1	2019	After complication of the course students are able to- I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing skills without grammatical mistakes..
9.	SANSKT:10 6 (B)	KAVYALANKARA SUTRA VRITTI -I	2019	I.Know the definition of poetry and prose II.Know the different types of Kavya III.Understand the different types of Riti IV.Understand the Pada and Padartha Doshas.
10.	SANSKT:10 7	HUMAN VALUES AND PROFESSIONAL	2019	After completion of the course students are able to I.Understand Bhagavad Gita as a guide for modern life style

		ETHICS -I		<p>II.Know the principles of Buddhism and Jainism</p> <p>III.Realize the necessary of practicing Human values and ethics in walks of life</p> <p>IV.Acquire the knowledge of Good and Bad</p> <p>V.Know the about crime and punishment according manu and Yajnavalkya</p>
11	SANSKT – 201	ELEMENTS OF DARSANAS –II	2019	<p>After completion of the course students are able to –</p> <p>I.Understand the knowledge of upamana and sabda pramanas</p> <p>II.Get the knowledge of Ayatharthanu Bhava</p> <p>III.Understand the Bahavana</p> <p>IV.Understand the Principals of Sankhya</p>
12	SANSKT – 202	VEDIC TEXTS –II	2019	<p>Students will know-</p> <p>I.The importance of Suktas</p> <p>II.The definition and purpose of Nirukta</p> <p>III.The meaning of Vedic words</p>
13	SANSKT – 203	PROSE AND POETRY - II	2019	<p>Students will able to get</p> <p>I.The beautification of prose literature.</p> <p>II.Enhancement of knowledge in appreciation of classical poetry</p> <p>III.Understanding about text that are selected.</p> <p>IV.Teaching skills in prose and poetry.</p>
14	SANSKT – 204	DRAMA ALANKARA AND PROSODY – II	2019	<p>Students will know</p> <p>I.The different characteristic features in Dramas</p> <p>II.The importance of nature and hermitages</p> <p>III.The features of Alankara and Classification of Alankaras</p> <p>IV.The knowledge of prosody</p>
15	SANSKT – 205 (A)	HISTORY OF SANSKRIT LITERATURE –II	2019	<p>After the completion of the course students are able to</p> <p>I.Know the features of Mahakavyas</p> <p>II.Know the structure of Drama and social message</p> <p>III.Know the moral values through the tales</p> <p>IV.Get the glance of classical Sanskrit literature</p>

16	SANSKT 205 (B)	– DRAMA AND POETRY - II	2019	I.Get knowledge of good II.Know the character of Hero and Hero in etc., in the Drama III.Know the changes stories between original and creativeness IV.Know the importance skill fullness in poetry of Kalaidasa
17	SANSKT 205 (C)	– ALANKARA AND PROSODY - II	2019	I.Know the features and Examples II.Understand the different types of Uktis in Alankaras III.Know the difference between stuti and Ninda Alankaras IV.Get knowledge of sikharini and Mandakranta vrittis V.Know the definition and importance of Gayatri Matras
18	SANSKT 206 (A)	- COMPARATIVE PHILOLOGY AND SIDDHANTA KAUMUDI – II	2019	After complication of the course students are able to – I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing Skills without grammatical mistakes
SANSKID-206 (B)		KAVYALANKARA SUTRA VRITTI - II	2019	I.Know the difference between Guna and Alankara II.Ability to understand the theory of Riti III.To enable to understand the usage of Sabdalankaras IV.Know the contribution of Vamana to alankara sastra
20	SANSKT 207	- HUMAN VALUES AND PROFESSIONAL ETHICS - II	2019	I.Understand the relevance of value based education in modern society II.Understand the old traditions of medical ethics III.Understand the solutions of illegal and unethical practice IV.Understand the man and nature, Natural calamities and get the solution regarding those situations.
21	SANSKT :30 1	(Sahitya) RASAGANGADHARA, (ANANA.I) – I (IE)	2019	After the completion of the course students are able to I. Understand the Rasaswarupa II.Understand the purpose of Kavya and different types of Kavya III.Know the interpretations of Rasa sutras and ten types of Gunas IV.Know the Abhasas
22	SANSKT :30	DHVANYALOKA - 1	2019	on completion of the course students are able to

	2			<p>I.Understand the Dhvani swarupam</p> <p>II.Understand the opinion of Dhvanyabhavavadins</p> <p>III.Know the Dhavanikavya Lakshana</p> <p>IV.Know the Vyangya as Kavyatma</p> <p>V.Get the knowledge of splendid sastra Dhvanyaloka</p>
23	SANSKT :30 3-A	KAVYAPRAKASA AND DASARUPAKA- 1(IE)	2019	<p>Students will get -</p> <p>I.The knowledge of definition of kavya, types of kavyas</p> <p>II.The Knowledge about verities of vyangya</p> <p>III.The Knowledge of vyanjanaswarupa</p> <p>IV.An idea of ten types of Rupakas</p>
24	SANSKT:30 3-B	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-I	2019	<p>On completion of the course students are able to</p> <p>I. Get the knowledge of sentence formation to write the essays on different issues</p> <p>II. Acquire the knowledge of Alankarikas</p> <p>III.Understand the different theories in Alankara sastra.</p> <p>IV.Understand the theory of Alankara and Rithi.</p>
25	SANSKT:30 3-C	Natyasastram Chapter I & VI only	2019	
26	SANSKT:30 3-D	Bhojaraja's Champu Ramayana (Balakanda only)	2019	
27	SANSKT:30 4	Personality Development in Pancatantra (Mitrabheda and Mitrapraktikam only)	2019	<p>.I.Know the losses arriving out of Non friend ship</p> <p>II.Know the world knowledge</p> <p>III.Achieving personality development through Panchatantra</p>
28	SANSKT:30 5-A	Introduction of Sanskrit languag Infant Reader complete	2019	
29	SANSKT:30	Raghuvamsam (Ist canto	2019	on completion of the course students are able to

	5-B	only)		<p>I.Understand the greatness of Sanskrit Language</p> <p>II.Know the greatness of poetry</p> <p>III.Get knowledge on panchamahakavya's after the epic literature</p> <p>IV.Get the knowledge about the kalidasas Natural and beautiful creations</p> <p>V.Understand the uses of upamalankara by kalidasa</p>
30	SANSKT:40 1	(SAHITYA) RASAGANGADHARA (ANANA-I)	2019	<p>After completion of the course students are able to</p> <p>I.Know the number of Rasas in kavyas</p> <p>II.Know the uses of Rasa to elevate the situations in kavya</p> <p>III.Acquire the knowledge of Gunas and their role in Kavyas</p> <p>IV.Understand the differentiation of Bhava in Alankara sastra.</p>
31	SANSKT :40 2	DHVANYALOKA –II	2019	<p>Students will be able to get-</p> <p>I.The knowledge about different forms of schools</p> <p>II.Knowledge about the classification of Dhvani Siddhanta</p> <p>III.Knowledge regarding different alankara dhvanis</p> <p>IV.Know the difference between Rasadhvani and Rasavadalankara</p> <p>V.Know the main Rasa in Ramayana and Mahabharatha</p>
32	SANSKT:40 3(A)	KAVYAPRAKASA AND DASARUPAKA– II	2019	<p>After the completion of the course students are able to –</p> <p>I.Understand the structure of the Kavya</p> <p>II.Get the knowledge of Rasa and it's Bhedas</p> <p>III.Find out the classification of Dhvani</p> <p>IV.Understand the Lakshana of Nataka</p> <p>V.Get the knowledge about 10 types of Nataka Bhedas</p>
33	SANSKT:40 3(B)	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-II	2019	<p>After the completion of the course students are able to –</p> <p>I.Get the knowledge of writing skills</p> <p>II.Acquire the knowledge of several Aesthetic poets like Mammata, Ruyyaka</p> <p>III.Understand the main theories on kavya of different poets</p> <p>IV.Get the knowledge of presentation skills on social related issues</p>

34	SANSKT :40 3(C)	Kavyadarsa Chapter – I	2019	
35.	SANSKT :40 3(D)	KavyaMeemamsa first to Eight Adhyayas	2019	
36.	SANSKT :40 4	Introduction to Epigraphy and Manuscriptology	2019	After the completion of the course students are able to I.Get the knowledge of inscriptions II.Acquire the knowledge of Brahmi and kharoshthi scripts III.Get the knowledge of writing materials in Ancient India IV.Get the knowledge of edition and critical edition of Manuscripts
37.	SANSKT :40 5 (A)	Hithopadesa of Narayanapandita Mitrabha and Mitrabheda	2019	Students will be able to I.Get the moral values II.Understand the mentality of different kinds of people in the society III.Acquire the knowledge to behave a good citizen and a well human being IV.Understand the message through neetikavya
38.	SANSKT :40 5(B)	Kautilya'sArthasastra Chapter – I (Vinayadhikarikam)	2019	

24. Sociology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MASO-101	Classical Sociological Theories	2019	1. This paper seeks to expose the students to the

				<p>classical thinkers and their contribution in building theoretical sociology.</p> <ol style="list-style-type: none"> 2. To Compare and contrast the basic theoretical perspectives of sociology 3. To acquaint students with recent trends in Sociological thought.
2	MASO -102	Sociological Research Methods and Statistics	2019	<ol style="list-style-type: none"> 1. This course aims to enable the students to understand the fundamental nature of the scientific approach towards social research and apply the skills in undertaking social research. 2. To equip the students with strategies of development for different segments of society. 3. To provide ways and means of understanding and studying social reality
3	MASO -103	Indian Society and Inclusive Growth	2019	<ol style="list-style-type: none"> 1. This paper presents a comprehensive and integrated profile 2. To gain a better understanding of past and present structure and continuity of society 3. Identify and analyze the problems in Indian society and suggest solutions from sociological perspective
4	MASO -104	Participatory Research	2019	<ol style="list-style-type: none"> 1. This paper is to inspire students to undertake research in partnership with stakeholders 2. To explain the emancipatory and empowering, collaborative and reflective approaches 3. To discuss the relationship between PRA and scientific method to incorporate the results to change the practice and policy.

5	MASO -105	Principles of Sociology	2019	<ol style="list-style-type: none"> 1. This paper gives the students an understanding of the basic principles of Sociology as an academic discipline 2. To analyze the ways in which people interact and function in groups 3. It provides a basic knowledge on the fundamental aspects of the important social institutions
6.	MASO -106	Human values and Professional Ethics - 1	2019	<ol style="list-style-type: none"> 1. To help students distinguish between values, skills, and understand the need, basic guidelines, content and process of value education 2. To provide Human Values and Ethics relating to Religion, Business, Law, Media and Environment 3. To provide an in depth knowledge about the Moral and ethical values for interpretation in their day to day life
7.	MASO -201	Applied Sociology	2019	<ol style="list-style-type: none"> 1. To help students develop clear understanding of key concepts in classical and contemporary sociology and how these concepts relate to some of the perennial themes in the discipline 2. To develop an appreciation of the link between sociological theory and practice 3. To help students master the art of explaining abstract material in clear, precise ways that can be easily understood even by a lay man
8.	MASO -202	Social Demography	2019	<ol style="list-style-type: none"> 1. To introduce the significance of population

				<p>and its relation to society</p> <ol style="list-style-type: none"> 2. To provide a theoretical knowledge of the basic concepts of population and changes 3. To enable the students to realize impact of population , changing global scenario, awareness on population control devices and analyse prospects
9.	MASO -203	Rural Sociology and Development	2019	<ol style="list-style-type: none"> 1. This course is to help the students to understand the difference between urban and rural development 2. To analyse the dynamics of rural Indian society in the context of its socio, political and economic contradictions 3. To evaluate the problems related to development in relation to the needs and aspirations of the marginalized sections
10.	MASO -204	Extension Work	2019	<ol style="list-style-type: none"> 1. This paper expose the students to apply sociological theories and principles in field areas 2. To give direct experience of social institutions and social problems through field work 3. To train for creative and innovative experiences in social field using research techniques
11	MASO -205	Environmental Sociology	2019	<ol style="list-style-type: none"> 1. This paper aims to provide the students with a comprehensive conceptual, theoretical and empirical backgrounds of interaction between Social world and Nature 2. To explore the relationship between human society and the larger natural environment 3. To prepare the students for further research in

				broad areas of environment and natural resource governance from sociological perspective
12	MASO -206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 1. To provide knowledge about Value oriented education, Medical ethics, Family values , Ethics and Moral code 2. To provide the Business, Environmental and social ethics followed and practiced 3. To enhance values of self-esteem and self-respect among students
13	MASO -301	Medical Sociology	2019	<ol style="list-style-type: none"> 1. This course will help the students to understand the concepts of health and illness 2. To understand the social facts of health and the root causes of illness 3. To apply sociological theories, concepts, and research to experiences of health, illness, health education, public health and the intense public issues related to health
14	MASO -302	Urban Sociology and Development	2019	<ol style="list-style-type: none"> 1. This paper attempts to analyse the urban social world and its dynamics, various theoretical constructs concerning the patterning and growth of towns and cities 2. To understand the various theoretical approaches to urban development and apply them to different aspects of cities 3. To study historical, economic, and political trends that have affected the growth and development of cities
15	MASO -303	Field Work and Extension (Village placement)	2019	<ol style="list-style-type: none"> 1. This paper aims at direct exposure of students to the real world and problems confronting society

				<ol style="list-style-type: none"> 2. Students will carry out field work in village for 10 days for practical experience 3. To learn about sociological study techniques like Participatory Rural Appraisal, Sampling, Interview and Extension
16	MASO 304	Generic electives (a) Human Rights	2019	<ol style="list-style-type: none"> 1. To study Human rights and Constitutional framework 2. To recognize the role of human rights in development, theories of development, development and tradeoff on human rights 3. To Understand the social, political, cultural, and comparative construction of human rights history , institutions, discourses, and futures
		(b) Sociology of Gender	2019	<ol style="list-style-type: none"> 1. To examine how society influences understandings and perception of differences between masculinity (what society deems appropriate behaviour for a “man”) and femininity (what society deems appropriate behaviour for a “woman”). 2. To understand influences of gender on identity and social practices. 3. To pay special focus on the power relationships that follow from the established genderorder in a given society and changes over time.
		c) Gerontology	2019	<ol style="list-style-type: none"> 1. This paper aims at understanding physical, psychosocial, and cultural aspects of the aged 2. To understand aging transitions and intergenerational issues at various contexts and its nexus 3. To examine health and illness adjusting to loss and care of persons with chronic illnesses and

				rehabilitative needs
		(d) Sociology of Andhra Pradesh	2019	<ol style="list-style-type: none"> 1. This paper aims to study the historical outline and emergence of Andhra society 2. To understand the culture and various social movements in Andhra Pradesh 3. To analyze the welfare and developmental programmes of the rural and urban Andhra Pradesh
17	MASO -305	Open elective (a) Social Psychology and Personality Development	2019	<ol style="list-style-type: none"> 1. This paper aims at the understanding the relationship of cognition and attitudes of individual and society 2. To focus on psychological aspects of the individual in the context of social behaviour 3. To examine group dynamics such as group thinking and decision making, leadership, persuasion, conflict and cooperation)
		(b) Business And Society	2019	<ol style="list-style-type: none"> 1. This paper aims at understanding the concepts of Social economy and knowledge management 2. To examine the business community and social responsibility 3. To understand the inter-relation among business firms, organizations , public policy, business law and governance
23	MASO -401	Criminology	2019	<ol style="list-style-type: none"> 1. This paper seeks to describe the students about the different types of crime and scope of criminology 2. To illustrate the causes of crime and crime rates 3. To study the crime scientifically through data on crime, trends and various theoretical

				approaches
24	MASO-402	Industrial Dynamics	2019	<ol style="list-style-type: none"> 1. This paper aims to provide the students about the structure and process of industrial organizations from sociological perspective 2. To deal with the effects of industrialization on Indian social systems and institutions 3. To study the internal relations which are connected directly or indirectly with industry
25	MASO-403	Field Work	2019	<ol style="list-style-type: none"> 1. This paper aims at exposing students in analysing the data 2. To understand the different variations in viva-voce 3. To understand the recent patterns in Practice
26	MASO-404	Generic electives (a) Social Welfare and Welfare Administration	2019	<ol style="list-style-type: none"> 1. This paper aims at understanding the efficiency of resources and services to meet the needs of the individuals, families, groups and communities 2. To understand the problems of Schedule castes, Schedule tribes, Backward classes and Minorities 3. To facilitate social relationship and adjustments necessary for the disadvantaged sections, children, women, youth and elderly
		(b) Social Entrepreneurship Development	2019	<ol style="list-style-type: none"> 1. The aim of this paper is to understand the theoretical positions of the Social entrepreneurship development 2. To be aware of the contemporary approaches to social entrepreneurship 3. To have comprehensive understanding of the context, process and effects of entrepreneurial

				activities
		(c) Sociological Perspectives	2019	<ol style="list-style-type: none"> 1. This paper aims at the students to compare and contrast basic theoretical perspectives of sociology through rigorous scientific enterprise 2. To sensitize the need for empirically grounded theories 3. To acquaint students with the recent trends in Sociological thought
		(d) Globalization and society	2019	<ol style="list-style-type: none"> 1. This paper aims at the students to understand the nature and dynamics of globalization and social context though various agencies 2. To analyze the interconnected changes in the economic, cultural, social, and political spheres of society 3. To understand ever-increasing integration of nations, regions, communities
27	MASO-405	Open elective (a) Globalization and Educational Pursuits	2019	<ol style="list-style-type: none"> 1. This paper aims to understand multifaceted nature of globalization and internationalization in the context of higher education 2. To examine key concepts and theories of globalization, international and comparative education 3. To make the students understand the Global citizenship from professional and academic perspective
		(b) Visual Sociology	2019	<ol style="list-style-type: none"> 1. This paper aims at providing the students a new perspective in study of deliberate versus spontaneous behavior

				<p>2. To be aware of recording social signals, expressions as spontaneous as possible</p> <p>3. To organize the recording of reactions and variations that occur as a response to the context</p>
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25. Tamil

26. Telugu Studies

27. Urdu

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	URD 101	Mubadiyat-e- Lisaniyat aur Tareeq-e –Zaban-e-Urdu	2019	<p>Course Outcomes:</p> <p>(1) Knowledge of history of basic Urdu Language.</p> <p>(2) Awareness about ancient and modern Indo-Aryan languages.</p> <p>(3) Command over origin and evolution of Urdu language.</p>	
2.	URD 102	Dakniyat	2019	<p>Out come</p> <p>(1) Student understands the brief history of Dakani Literature.</p> <p>(2) Student will be able to analyses the writings of Mohd Quli Qutub Shah.</p> <p>(3) Student will learn about the classical genres of Dakani</p>	
3.	URD 103	Classiki Nasr	2019	<p>Course Outcomes:</p> <p>(1) Student will be able to understand the early Urdu poetry of Northern India.</p> <p>(2) Understanding the different forms of Urdu Poetry and poets.</p>	

4.	URD 104	Arabi Zaban-o-Adab	2019	<p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of humor and satire in Urdu literature.</p> <p>(2) Differentiate between satire and humor in text.</p> <p>(3) Analyze the text and identify the elements of satire</p>	
5.	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2019	<p>Course Outcomes:</p> <p>(1) Able to read, write and understand simple Arabic sentences.</p> <p>(2) Translate simple Arabic sentences.</p> <p>(3) Student will gain brief awareness of Arabic literature</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Qaseeda from Dakani period.</p> <p>(2) Differentiate between the Dakani and Urdu Qaseeda with respect of language, diction and style</p> <p>(3) Understand the salient features of Urdu Qaseeda with special reference to Nusrati, Sauda and Zauq.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Marsiya.</p> <p>(2) Compare and analyse the Marsiya of Anees and Dabeer.</p>	
6.	URD 106	Human Values and Professional Ethics – I	2019	<p>Course Outcomes:</p> <p>(1) Knowledge about tradition of Urdu Drama.</p> <p>(2) Distinguish various forms and techniques of Urdu Drama.</p> <p>(3) Analyses critically the text of Anar kali and Inder Sabha.</p> <p>Course Outcomes:</p> <p>(1) The student would enrich the knowledge about the Urdu poets and writers of Andhra Pradesh and Tamil Nadu.</p> <p>(2) Would understand the features of regional Urdu poets</p>	
7.	URD 107		2019	<p>Course Outcomes:</p> <p>(1) Understand, What are the Human Values accepted globally.</p> <p>(2) Knowing the importance of Human Values in religious</p>	

8.	URD 201	Rayalaseema ka Sher-o-Adab	2019	Course Outcomes: (1) Have learn about the important historical events of Urdu Poetry. (2) Have knowledge about the most important schools of	
9.	URD 202	Classiki Shairi	2019	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyze the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani	
10.	URD 203	Hali : Hayat aur Adabi Khidmat	2019	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	
11.	URD 204	Farsi Zaban-o-Adab	2019	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	

12.	URD 205	Ghair Afsanavi Adab	2019	<p>Course Outcomes:</p> <p>(1) Student will be able to read, write and understand simple persian sentences.</p> <p>(2) Acquire Knowledge about the Persian poetic writings of Sa'di, Hafiz and Iqbal.</p> <p>(3) Student will gain brief awareness of Persian literature.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of Faiz Ahmed Faiz.</p> <p>(2) Identify the uniqueness of the poetry of Faiz Ahmed Faiz.</p> <p>(3) Understanding the salient features of the poetry of Faiz Ahmed Faiz.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of SulaimanAtherlaweed</p>	
13.	URD 206 206	Human Values and Professional Ethics –II	2019	<p>Course Outcomes:</p> <p>(1) Awareness of literature written in Rayalaseema.</p> <p>(2) Understand the style of new poets of thisregion.</p> <p>(3) Gain knowledge about two of the pominent prose writers of this area</p> <p>Course Outcomes:</p> <p>(1) Apply the skills of Ilm e bayan and identifying the phrases in poetry.</p> <p>(2) Applying Ilm e Areez skill in poetry.</p>	
14.	URD 207		2019	<p>Course Outcomes:</p> <p>(1) Awareness about Professional Ehics and its categorization.</p> <p>(2) Understand the importance of Professional Ethics in society.</p>	
15.	URD 301	Jadeed Nasr	2019	<p>Course Outcomes:</p> <p>(1) Knowledge about the forms and tradition of Urdu Ghazal.</p> <p>(2) Understanding Dakani Ghazal with reference to eminent Dakani poets.</p> <p>(2) Understanding Classiki Ghazal and Jadeed Ghazal with</p>	

16.	URD 302	Jadeed Nazm	2019	<p>Out comes</p> <p>(1) Understanding the forms of Urdu Nazm. (2) Critically estimate and explain the art and technique of famous Urdu poets. (3) Knowledge about the distinctive features Urdu Nazm</p>	
17.	URD 303	Urdu Tanqeed	2019	<p>Out come</p> <p>(1) The learner would understand about the mile stones of Urdu Novel. (2) The learner would understand the technical features of Urdu Novel. (3) The learner would understand about the Urdu Novel writers.</p> <p>Out come</p> <p>(1) Knowledge about tradition of Urdu Afsana. (2) Awareness of literary trends and its impact on Urdu Afsana. (3) Identifying and distinguishing the elements in Urdu Afsana</p> <p>Course Outcomes:</p> <p>(1) The learner would understand about the history of computer. (2) The learner would understand the technical features of Urdu computer.</p>	
18.	URD 304 A URD 304 B URD 304 C URD 304 D	(a) Sir Syed ka Khusoosi Mutalea (b) Iqbal ka Khusoosi Mutalea (c) Faiz ka Khusoosi	2019	<p>Course Outcomes:</p> <p>(1) The learner will know about the aims and objectives of the Journalism. (2) Distinguish between writings of news paper, radio and television. (3) The learner will know about the different fields of Urdu journalism.</p>	

19.	URD 305 A URD 305 B URD 305 C	(a) Urdu Ghazal (b) Jadeed Dakani Shairi (c) Urdu Afsana	2019	<p>Course Outcomes:</p> <p>(1) Knowledge about Jadeed Dakani Shairi. (2) Understand Jadeed Dakani Shairi and its vocabulary and diction. (3) Critical awareness about 5 eminent poets of Jadeed Dakani.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about types, techniques and issues of translation. (2) Distinguish between various types of translations. (3) Understand the tradition of Urdu translation and literary</p>	
20.	URD 401	Urdu Drama	2019	<p>Course Outcomes:</p> <p>(1) Knowledge of Basic Linguistics. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.</p>	
21.	URD 402	Adabi Tehreekat aur Rujhanat	2019	<p>Out comes</p> <p>(1) Knowledge about research, types of research and method of research. (2) Distinguish between various types of research writings. (3) Capable for selection of topic, material collection, designing the research work and writing research paper.</p>	

22.	URD 403	Tanz –o- Mizah	2019	<p>Out come</p> <p>(1) Knowledge about Literary criticism. (2) Vies and contributions of Hali and Shibli on literary criticism. (3) Understanding 6 schools of literary criticism.</p> <p>Out come</p> <p>(1) Understand the tradition of Ghari Afsanavi Adab and its salient features. (2) Literary importance of Maktoob Nigare and Inshaiya. (3) Literary importance of Khaka and Safarnama.</p> <p>Course Outcomes:</p> <p>(1) Understand the literary contributions of Altaf Husain Hali. (2) Importance and salient features of Mussadas, Muqaddama & Maqalat. (3) Understand the writing style of Hali as a biographer</p> <p>Course Outcomes:</p> <p>(1) Knowledge about form and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to 2</p>	
23.	URD 404 A URD 404 B URD 404 C URD 404 D	(a) Urdu Tarjuma Nigari (b) Urdu Marsiya (c) Urdu Khudnavisht	2019	<p>Outcomes:</p> <p>(1) Able to know the history and trends of Telugu, Hindi and English languages. (2) Gain the comparative knowledge of various languages and their literature</p>	
24.	URD 405 A URD 405 B URD 405 C	(a) Ibtdayi Urdu (b) Tehqeeq - Tariqekar (c) Urdu Qaseeda	2019	<p>Course Outcomes:</p> <p>(1) Specialized in the contributions of Sir Syed Ahmed Khan. (2) Contributions of Sir Syed Ahmed Khan, as literary person and as a educationist. (3) Understanding the contributions of his literary friends</p> <p>Course Outcomes:</p> <p>(1) Specialized in the contributions of Sir Mohammed Iqbal. (2) Contributions of Allama Iqbal with reference to Bal e</p>	

S.V.U. College of Sciences

28. Anthropology

S. No.	Name of the Programme	Course Code	Title of the Course	Years	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	M.Sc. Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2019	<ul style="list-style-type: none"> a. Exposed to the basic introductory background about Socio-cultural Anthropology, its historical background and relation to other branches b. Provides knowledge about the entire subject matter of the socio-cultural anthropology as well as its different sub-branches. c. Exposed to social institutions d. Know the religion beliefs, rituals and myth
2	M.Sc. Anthropology	ANO : 102	Introduction to Biological Anthropology	2019	<ul style="list-style-type: none"> a. Exposed to the basic concept, meaning and scope of Biological Anthropology b. Explain how human being acts as the central figure of Anthropology c. Elucidate the major divisions of Biological/ physical Anthropology d. Know the inter-relationship between Biological Anthropology and other sciences e. To know how Man evolved in animal kingdom f. To understand how evolution has

					occurred and what are the evidences of evolution and addresses human variation and the causes of variations
3	M.Sc. Anthropology	ANO-103	Introduction to Archaeological Anthropology	2019	<ul style="list-style-type: none"> a. Able to define archaeological anthropology and its branches b. Understand the geological timescale, tool typology and technology c. The Course will explain the basic concepts and terminology used in prehistoric archaeology d. Understand chronological and cultural determinants of Indian and European prehistory
4	M.Sc. Anthropology	ANO-104P	Somatometry & Somatoscopy	2019	
5	M.Sc. Anthropology	ANO 105p	Archaeological Anthropology	2019	
6.	M.Sc. Anthropology	ANO 106	Economic and Political Anthropology	2019	<ul style="list-style-type: none"> a. Able to learn meaning and scope of economic anthropology b. To understand the division of labor by gender and age, exchange of goods and gifts, and to understand the market economy. c. Able to know the historical background of Political Organization besides types and trends of Political Organization including types like i.e. Band, Tribe, Chiefdoms and State d. To know the local institutions: panchayats (traditional and statutory)

7.	M.Sc. Anthropology	ANO 107	Human Values and Professional Ethics -1	2019	
8.	M.Sc. Anthropology	ANO 201	Comparative Ethnography and Indian Anthropology	2019	<ul style="list-style-type: none"> a. To understand the major ethnological regions of the world b. To know the ethnic and linguistic classifications c. Able to understand the traditional Indian culture d. To know the contributions of Indian anthropologists
9.	M.Sc. Anthropology	ANO 202	Principals of Genetics	2019	<ul style="list-style-type: none"> a. understand about the scope of genetics and its historical development b. to learn the biology of cell and cell division c. Exposed to the patterns of the inheritance d. Know about blood groups and their anthropological perspective
10	M.Sc. Anthropology	ANO 203	Research Methods in Anthropology	2019	<ul style="list-style-type: none"> a. To understand the fieldwork traditions in Anthropology b. To understand the concept of research and its purpose c. highlight the conceptual structure of a research design d. understand the various statistical tools in the analysis and interpretation of the data
11	M.Sc. Anthropology	ANO 204P	Craniology and Craniometry	2019	
12	M.Sc. Anthropology	ANO205P	Doing Ethnography	2019	

13	M.Sc. Anthropology	ANO206	Prehistoric India	2019	<ul style="list-style-type: none"> a. learn the regional distribution of lower, middle, and upper Paleolithic cultures b. To learn the Mesolithic culture and typo- technology c. Learn the regional distributions of Neolithic cultures d. understand the copper and iron age e. exposed to the distribution of megaliths
14	M.Sc. Anthropology	ANO 207	Human Values and Professional Ethics -II	2019	
15	M.Sc. Anthropology	ANB 301	Human Evolution and Fossil Evidence	2019	<ul style="list-style-type: none"> a. Understand the evolutionary trends of primates, prosimians to homosapiens b. To know the hominid evolution c. To know the Neanderthals distributions and extension d. Exposed to the homo sapiens distribution and feature of human species
16	M.Sc. Anthropology	ANB 302	Human Genetics	2019	<ul style="list-style-type: none"> a. understand the meaning and scope of human genetics b. know methods of studying human chromosomes and chromosomal abnormalities c. depict Inborn errors of metabolism with typical examples and human human ABO blood group system and its fundamentals d. know the concept of “one-gene-one-

					enzyme hypothesis” which explains development of genetic diseases/disorders caused by defective genes controlling the functions of enzymes in metabolic pathways
17	M.Sc. Anthropology	ANB 303P	Human Osteology and Osteometry	2019	
18	M.Sc. Anthropology	ANB 304P	Dermatoglyphics	2019	
19	M.Sc. Anthropology	ANB 305	Anthropological Demography	2019	<ul style="list-style-type: none"> a. Know about the different population growth theories b. Learn the basic demographic variables c. Understand how the different factors regulates the population growth d. Understand the different demographic models e. Learn the genetic consequences of family planning
20	M.Sc. Anthropology	ANB 306	Biostatistics and Computer Applications	2019	<ul style="list-style-type: none"> a. To understand the concept of research and its purpose b. To enlighten the process of research and conceptual structure of a research design c. Understand the disease outcomes through measurement of descriptive, analysis of variance and regression models through computer applications d. Know the use of computers in the analysis data and power point presentation
21	M.Sc. Anthropology	ANB 307	Forensic Anthropology	2019	a. able to know about forensic

					<p>anthropology, a specialized, applied branch of physical/biological anthropology which deals with the crime investigation</p> <ul style="list-style-type: none"> b. understand how dermatoglyphic, somatoscopic characteristics and body fluids helpful in crime investigation c. know the use of skeletal remains in forensic investigations d. know the importance of modern methods in crime investigation
22	M.Sc. Anthropology	ANB 308	Palaeoanthropology	2019	<ul style="list-style-type: none"> a. understand the geological time scale and Pleistocene epoch b. know about tool making techniques and tool types c. gain knowledge about dating methods d. learn about Paleolithic, Mesolithic and Neolithic cultures in India
23	M.Sc. Anthropology	ANB 401	Biological Anthropology	2019	<ul style="list-style-type: none"> a. Understand the basic concept, meaning and scope of Biological Anthropology b. Know the biological variation in modern human populations c. Understand the human adaptability and impact of urbanization on humans d. Bio-cultural aspects of health and disease
24	M.Sc. Anthropology	ANB-402	Human Population Genetics	2019	Students will

					<ul style="list-style-type: none"> a. Explain the basic terms/concepts of human population genetics b. Appreciate the mechanisms of evolutionary forces in shaping biological diversity c. Understand the importance of Hardy – Weinberg Equilibrium especially the gene frequency changes with respect to Mutation, Genetic drift, Selection, Gene flow and to investigate them in empirical situations in human populations d. Know about breeding isolation and its implications in human population genetics. e. Understand various mating patterns (inbreeding and types of consanguineous marriages) and measure the inbreeding in families
25	M.Sc. Anthropology	ANB-403P	Advanced Biological Anthropology	2019	
26	M.Sc. Anthropology	ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2019	
27	M.Sc. Anthropology	ANB -405	Human Growth, Physique and Nutrition	2019	<ul style="list-style-type: none"> a. Know about the Differentiate the term growth, maturation and development b. To learn the methods of studying growth and the factors affecting the growth c. To understand the Human Physique and its Relation of Function, Disease

					and Behavior. d. Know the socio-cultural aspects of nutrition and nutrients in health and diseases
28	M.Sc. Anthropology	ANB 406	Applied Biological Anthropology	2019	<ul style="list-style-type: none"> a. Know about various applications of anthropometry and kinanthropometry in various fields b. Understand about the importance of forensic anthropology in crime investigations c. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy d. Learn about the human geno project
29	M.Sc. Anthropology	ANB 407	Medical Genetics	2019	<ul style="list-style-type: none"> a. Understand the overlapping areas of anthropology and genetics, anthropology and medicine (Disease) b. Understand the different methods of identification genetic diseases c. Know about epidemiology, socio cultural and ecological dimensions of genetic diseases control and treatment d. Learn the knowledge, attitude and currying practices of genetic diseases
30	M.Sc. Anthropology	ANB-408	Epidemiology	2019	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of

					<p>public health.</p> <ul style="list-style-type: none"> b. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology c. Know about Complications of obesity on health its prevention and control d. Understand the complex web of biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
31	M.Sc. Anthropology	ANB -409	Human Ecology	2019	<ul style="list-style-type: none"> a. Exposed to the various ecological settings of human habitat . b. Know the ecological evaluation and adaptation. c. To understand the growth and development in various eco-systems d. Understand the Differential Fertility and Mortality, Survival Indices, quality of Life and Fitness
32	M.Sc. Anthropology	ANS 301	Theories of Culture	2019	<ul style="list-style-type: none"> a. Understand the Conceptual Contributions of E. B. Tylor, B. Malinowski, A. L. Kroeber, L. White, Unilineal Evolution (L. H. Morgan and E. B. Tylor); Multilineal Evolution (J. Steward); Universal Evolution (L. White) b. To know the British School; German-Austrian School; American – Distribution School of culture

					<ul style="list-style-type: none"> c. Know the Patterns of Culture (R. Bendict); Basic Personality, Model Personality (Kardiner, Linton, Cora Dubois); Selfhood (Murphy); Symbolic (G. Obeysekere) d. understand the historical approaches of culture
33	M.Sc. Anthropology	ANS 302	Social Anthropology of Complex Societies	2019	<ul style="list-style-type: none"> a. Learn the meaning and approach of great and little traditions b. learn about the peasant societies and contemporary peasant societies c. know the culture of poverty, institution and complex societies d. understand problems of urbanization and social changes
34	M.Sc. Anthropology	ANS 303P	Participatory of Research methods in Development Process	2019	
35	M.Sc. Anthropology	ANS 304P	Non-Governmental Organizations and Extension studies	2019	
36	M.Sc. Anthropology	ANS 305	Ecological Anthropology	2019	<ul style="list-style-type: none"> a. Understand the environment and ecosystem in understanding the cultural modifications b. Know about the cultural ecology, cognitive ecology, single unified ecology, and ethno ecology. c. Learn issues and prospects on development projects and displacement d. Understand Biodiversity for sustainable development Knowabout Ecological protest movements (Chipko and Narmada

					Bachao Andolan (NBA));
37	M.Sc. Anthropology	ANS 306	Applied Anthropology- Indigenous Communities	2019	<ul style="list-style-type: none"> a. Know the Similarities and Differences between Applied and Action Anthropology, Indigenous communities and applied anthropology. Indigenous rights. b. Know the process of acculturation and assimilation, socialization c. Know about applications of Anthropology in the management of health, agriculture, education and biodiversity and poverty eradication d. Gain the knowledge on tribal welfare, tribal problems, forest and property rights, shifting cultivation and tribal movements
38	M.Sc. Anthropology	ANS 307	Anthropology of Religion Sacred complexes in India	2019	<ul style="list-style-type: none"> a. Know about meaning and relation with power and political leverages, ethnic identity and other aspects of culture in tradition and modern societies b. Know the different anthropological theories of religion c. Know the issues of right of food among by Hindus, five symbols of sikh identity, Aspects of sarora ritual and Shamansism, and Christianity in India d. To understand Contemporary issues of religious violence, secularism and fundamentalism

39	M.Sc. Anthropology	ANS 308	Anthropology and Career Promotion	2019	<ul style="list-style-type: none"> a. Understand the anthropology in competitive examinations b. Know about participatory research appraisal c. Exposed to the issues in tribes, tribal problems and cast populations d. Learn the books to be consulted, review of questions and scheme of valuation
40	M.Sc. Anthropology	ANS 401	Structural Anthropology	2019	<ul style="list-style-type: none"> a. Know the social structure and function of culture b. Understand about the ideal and real social structure and social organization c. Know the general notion of structuralism d. Learn the symbols and structure
41	M.Sc. Anthropology	ANS-402	Medical Anthropology	2019	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the etiology, control of infections and non-infections diseases c. Understand the ethno-medicine in the management of health and illness behavior d. Understand the modern medical systems and health care delivery services

42	M.Sc. Anthropology	ANS-403P	Computer Applications	2019	
43	M.Sc. Anthropology	ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2019	
44	M.Sc. Anthropology	ANS -405	Developmental Anthropology	2019	<ul style="list-style-type: none"> a. Know about the Concept of Development and Sustainable Development b. Understand the steps in project preparation, goals, process of implementation and monitoring. c. Role of government, NGOs and peoples participation in development d. Know the watershed management and irrigation, resettlement, (Narmada) poverty Alleviation (Velugu); Primary Education (VECs
45	M.Sc. Anthropology	ANS 406	Culture and Management	2019	<ul style="list-style-type: none"> a. Know the concept of organizational culture. Its links with cultural anthropology Organizational ethnography. Anthropology of work b. Understand the Theories of organizational culture. Different anthropological traditions c. Know the How culture affect management Changes in management styles Future outlook. d. To understand the Ethno methodological approaches, Organizational symbolism. Integration, differentiation and fragmentation as three perspective approaches to organizational culture
46	M.Sc. Anthropology	ANS 407	Anthropology of Displaced	2019	<ul style="list-style-type: none"> a. Know the peoples perception towards

			Populations		<p>development and displacement</p> <p>b. Understand the role of government and non-government agencies in the process of displacement, resettlement and rehabilitation.</p> <p>c. Understand policy issues relating development and displacement in legal implications of displacement and rehabilitation</p> <p>d. Learn the Socio-Cultural effects of displacement, Socio disorganization, process of disintegration and reintegration</p>
47	M.Sc. Anthropology	ANS-408	Visual Anthropology	2019	<p>a. Know about the concept, scope and Historical Development of visual anthropology</p> <p>b. Know about the appraisal of ethnographic films in cultural context</p> <p>c. Knowledge about descriptive studying of Visual data produced by Cultures</p> <p>d. To understand the ethnographical films, still photos film shootings and commentary</p>
48	M.Sc. Anthropology	ANS -409	Urban Anthropology	2019	<p>a. Exposed to the history of urbanization.</p> <p>b. Understand the environment and ecological processes of urban</p> <p>c. Understand the urbanization and industrialization on cultural complexity</p>

					d. Understand the relevance of anthropology to urban industry, Business and Corporate Sectors; Urbanization and Social Change in India.
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29. Biochemistry

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	BCH101	Biochemical and Biophysical methods	2019	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	BCH 102	Molecular Physiology and community nutrition	2019	<ol style="list-style-type: none"> 1. Gain the knowledge about circulatory and excretory systems. 2. Know the importance of muscular and nervous system. 3. Health benefits and malnutrition of proteins and fats. 4. Know the importance of nutrition in maintenance of health and diseases.
3	BCH 103P	Practical related to Biochemical Preparations and Analysis	2019	<ol style="list-style-type: none"> 1. Learn safety and precautionary measures for working in a laboratory. 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments

				<ol style="list-style-type: none"> 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological samples.
4	BCH 104P	Practical related to Analytical methods	2019	<ol style="list-style-type: none"> 1. Learn how to standardize various biomolecules. 2. Separate biomolecules by paper chromatography and thin layer chromatography 3. Demonstrate separation of protein by electrophoresis. 4. Isolation and spectrophotometric characterization of plant pigments.
5	BCH 105P	Human values and Professional ethics-I	2019	<ol style="list-style-type: none"> 1. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 2. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 3. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 4. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas 5. Gain the knowledge about views on Manu and Yajnavalkya
6	BCH 106	Cell and Biomolecules	2019	<ol style="list-style-type: none"> 1. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 2. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 3. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 4. Understand the concept of structural organization of nucleic acids
7	BCH 201	Energy metabolism	2019	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism. 3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.

				4. Describe the details of lipid metabolism.
8	BCH 202	Metabolism of Nitrogen based molecules	2019	<ol style="list-style-type: none"> 1. Understand the anabolic and catabolic reactions of proteins and aminoacids. 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	BCH 203P	Practical related to Enzymology	2019	<ol style="list-style-type: none"> 1. Learn about estimation of various enzymes in biological sample. 2. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 3. Learn about the factors affecting enzyme activity and determination of K_m. 4. Demonstrate the Immobilization of enzymes.
10	BCH 204P	Practical related to Molecular Biology	2019	<ol style="list-style-type: none"> 1. Isolate nucleic acids from various sources. 2. Estimate the nucleic acids quantitatively. 3. Determine the melting temperature. 4. Determine the purity of DNA by UV method.
11	BCH 205	Human values and Professional ethics-II	2019	<ol style="list-style-type: none"> 1. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 2. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 3. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 4. Understand the Ethical theory, Ecological crisis, Pest control,

				<p>Pollution and waste, Climate change, Energy and population.</p> <p>5. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy.</p>
12	BCH 206	Enzymology	2019	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behavior and allosteric regulation.
13	BCH 301	Microbial Biochemistry and Genetics	2019	<ol style="list-style-type: none"> 1. Understand the basics of microbiology like nomenclature and classification of microorganisms, understand the various biological and non-biological method to control microorganisms 2. The student will learn about different mode of nutrition in microorganisms and about viruses - Isolation, purification and characterization. 3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. 4. Gain knowledge in bacterial genetics includes the different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism(CRISPR) and Describe the various types of mutations and its effect.
14	BCH 302	Molecular Biology	2019	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in

				<p>prokaryotes and eukaryotes.</p> <ol style="list-style-type: none"> Learn about genetic code and their evolution. Gain knowledge in Different stages and components of protein synthesis.
15	BCH 303P	Practical related to Microbiology	2019	<ol style="list-style-type: none"> Handle the microscope. Learn Methods of sterilization and preparation of various culture media, Purification techniques. Identification of isolated bacteria, and Growth curve of microorganism. Learn Staining techniques for bacteria and yeast. Gain knowledge in the Preparation of wine from Grapes. Production and estimation of alcohols, citric acid, lactic acid etc.
16	BCH 304P	Practical related to Clinical Biochemical Analysis	2019	<ol style="list-style-type: none"> Collect and maintain the biological samples for clinical assay. Estimate the blood and serum enzymes for diagnosis of diseases. Qualitatively analyse the abnormal constituents in urine. Work with diagnostic kits
17	BCH 305 Generic Elective (Two papers out of three)	<ol style="list-style-type: none"> Molecular Endocrinology Clinical Biochemistry Cell and Developmental Biology	2019	<ol style="list-style-type: none"> Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
18	BCH 305 B	Clinical Biochemistry	2019	<ol style="list-style-type: none"> Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract.

				4. Investigate the serum enzymes in liver
19	BCH-305c	Cell and Developmental Biology	2019	<ol style="list-style-type: none"> 1. Acquire knowledge on basic concepts of Developmental Biology. 2. Gain the proficient knowledge about zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Acquire knowledge about biomembrane concept and various membrane transport systems
20	BCH 306 Open Elective to others	a) General Biochemistry b) Environmental Biochemistry	2019	<ol style="list-style-type: none"> 1. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 2. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 3. Understand the concept of structural organization of nucleic acids. <ol style="list-style-type: none"> 1. Describe the Structure of porphyrins, Chemistry and functions of water and fat soluble vitamins. 2. Students will be able to know how to conserve natural resources for future. 3. Students will be able to describe differing types of <i>ecosystems</i> and their characteristic features. 4. Gain the knowledge about different types of pollution in the environment. 5. Know the Relation between human population and environment. <ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and

		c)Experimental aspects related to analytical methods		Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
21	BCH 401	Genetic Engineering	2019	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research. 5. principle, Bioinstrumentation and applications of spectroscopy techniques.
22	BCH 402	Technical Writing, Biostatistics and Bioinformatics	2019	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in biological sequence analysis
23	BCH 403P	Practical related to Immunology and Hematology	2019	<ol style="list-style-type: none"> 1. Collect the blood samples and handle the microscope. 2. Analyze the blood samples. 3. Expert in immunodiffusion and immunoelectrophoresis techniques
24	BCH 404P	Practical/Project work	2019	
25	BCH 405	a) Immunology	2019	a. Gain knowledge on different types of antigens, antibodies and

	Generic Elective	<p>b) Applied Biochemistry</p> <p>c) Plant Biochemistry</p>		<p>how different types of antibodies are produced.</p> <p>b. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>c. Gain knowledge on undesirable immunological reactions and their complication in health management.</p> <p>d. 4.Apply knowledge in disease diagnosis through serological tests.</p> <p>1.Gain knowledge in Fermentation Technology and industrial production of chemicals.</p> <p>2. Learn Industrial application of Enzyme Technology.</p> <p>3. Gain knowledge in Applications of hybridoma technology.</p> <p>4. Understand the applications of genetic engineering in biotechnology and Genetically Modified Organisms.</p> <p>5. Understand the Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins;</p> <p>1.Gain knowledge in special features of secondary plant metabolism.</p> <p>2Know the evolutionary studies Origin of basic biological molecules.</p> <p>3Understand the Concepts of natural evolution and population genetics.</p>
26	BCH 406 Open Elective to	a) Research Methodology	2019	<p>1. Discuss the various steps involved in conducting research.</p> <p>2. Learn to apply hypothesis testing via some of the statistical distributions.</p>

	others (For other department t students)			<ol style="list-style-type: none"> 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis <p>1Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates.</p> <p>2Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system.</p> <p>3Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract.</p> <p>4.Investigate the serum enzymes in liver diseases</p>
27		b) Biochemistry of diseases	2019	<ol style="list-style-type: none"> 1. Determine the body composition and body weight by using various methods. 2. To describe the importance of protein and fats. 3. Gain knowledge on vitamins and minerals to maintain health. 4. Aquire knowledge on nutritional importance in different ages in the life

Immuno technology

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	Core 1	Biochemical and Biophysical methods	2019	<ol style="list-style-type: none"> 1.Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments

				<p>in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields.</p> <p>4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques</p>
2	Core 2	Molecular Physiology and community nutrition	2019	<p>5. Gain the knowledge about circulatory and excretory systems.</p> <p>6. Know the importance of muscular and nervous system.</p> <p>7. Health benefits and malnutrition of proteins and fats.</p> <p>8. Know the importance of nutrition in maintenance of health and diseases</p>
3	Core 3P	Practical related to Biochemical Preparations and Analysis	2019	<p>1. Learn safety and precautionary measures for working in a laboratory.</p> <p>2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments</p> <p>3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods.</p> <p>4. Gain the knowledge about isolation studies of biological samples.</p>
4	Core 4P	Practical related to Analytical methods	2019	<p>1. Learn how to standardize various biomolecules.</p> <p>2. Separate biomolecules by paper chromatography and thin layer chromatography</p> <p>3. Demonstrate separation of protein by electrophoresis.</p> <p>4. Isolation and spectrophotometric characterization of plant pigments</p>
5	Compulsory Foundation	Cell and Biomolecules	2019	<p>6. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division.</p> <p>7. Understand the classification, structure and biochemical reactions of aminoacids and proteins.</p> <p>8. Describe the classification, structure and biochemical</p>

				<p>reactions of carbohydrates and lipids.</p> <p>9. Understand the concept of structural organization of nucleic acids.</p>
6	Elective foundation	Human values and Professional ethics-I	2019	<p>10. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions.</p> <p>11. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom.</p> <p>12. Know about Purusharthas, Dharma, Artha, Kama, Moksha.</p> <p>13. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas.</p> <p>14. Gain the knowledge about views on Manu and Yajnavalkya.</p>
7	Core 1	Energy metabolism	2019	<p>1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life.</p> <p>2. Describe the importance of Electron transport and ATP production mechanism.</p> <p>3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.</p> <p>4. Describe the details of lipid metabolism.</p>
8	Core 2	Metabolism of Nitrogen based molecules	2019	<p>1. Understand the anabolic and catabolic reactions of proteins and aminoacids.</p> <p>2. Gain knowledge in the importance of aminoacids as biosynthetic precursors.</p> <p>3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders.</p> <p>4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.</p>
9	Core 3	Practical related to	2019	<p>5. Learn about estimation of various enzymes in biological</p>

		Enzymology		<p>sample.</p> <ol style="list-style-type: none"> 6. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 7. Learn about the factors affecting enzyme activity and determination of K_m. 8. Demonstrate the Immobilization of enzymes
10	Core 4	Practical related to Molecular Biology	2019	<ol style="list-style-type: none"> 1. Isolate DNA from bacterial, plant and animal cells and RNA from yeast cells. 2. Estimate concentrations of DNA and RNA by conventional methods and UV absorption methods. 3. Determine the melting temperature(T_m) of DNA. 4. Learn procedures for isolation of phage M_{13} and single and double standard M_{13}DNA.
11	Compulsory Foundation	Enzymology	2019	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behaviour and allosteric regulation
12	Elective foundation	Human values and Professional ethics-II	2019	<ol style="list-style-type: none"> 6. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 7. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 8. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 9. Understand the Ethical theory, Ecological crisis, Pest control,

				<p>Pollution and waste, Climate change, Energy and population.</p> <p>10. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy</p>
13	Core 1	Microbial Biochemistry and Genetics	2019	<p>1. Understand the basics of microbiology like nomenclature and classification of microorganisms and different modes of nutrition in microorganisms.</p> <p>2. Learn and understand the various biological and non-biological methods to control microorganisms and Biology of subviral agents – Viroids, Prions, Satellite viruses.</p> <p>3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes.</p> <p>4. Gain knowledge in bacterial genetics like different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism (CRISPR) and various types of mutations and their effects</p>
14	Core 2	Immunology	2019	<p>1. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
15	Core 3	Practical related to Microbiology	2019	<p>1. Handle the microscope.</p> <p>2. Learn Methods of sterilization and preparation of various culture media, Purification techniques.</p> <p>3. Identification of isolated bacteria, and Growth curve of microorganism.</p> <p>4. Learn staining techniques for bacteria and yeast.</p> <p>5. Gain knowledge in the Preparation of wine from Grapes.</p> <p>6. Production and estimation of alcohols, citric acid, lactic acid etc</p>

16	Core 4	Practical related to Immunology	2019	<ol style="list-style-type: none"> 1. Perform RBC, WBC count and differential count. 2. Do all haematological tests that will be done in clinical labs. 3. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 4. Do Heme agglutination tests for identification of different antigens
17	Generic Elective (Two papers out of three)	a) Molecular Biology	2019	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b)Molecular Endocrinology		<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
		c)Cell and Developmental Biology		<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and

				<p>Production of transgenic plants.</p> <p>4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis.</p>
18	Open Elective to others (For other department students)	a) Basics of Immunology	2019	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation. 4. Apply knowledge in disease diagnosis through serological tests.
		b) Immunotechniques		<ol style="list-style-type: none"> 1. To purify and analyse the antigens and antibodies. 2. To apply different Hybridization techniques and ELISA, RIA. 3. To detect various diseases by application of antiisera. 4. To engineer antibodies and catalytic antibodies and produce drugs to allergies
19	Core 1	Microbial Biochemistry and Genetics	2019	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
20	Core 2	Immunology	2019	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions.

				<ul style="list-style-type: none"> 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
21	Core 3	Practical related to Microbiology	2019	<ul style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
22	Core 4	Practical related to Immunology	2019	<ul style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing.
23	Generic Elective (Two papers out of three)	a) Molecular Biology	2019	<ul style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of

				protein synthesis
		b) Molecular Biology	2019	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones
		c) Cell and Developmental Biology	2019	<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis
24	Open Elective to others (For other department students)	c) Basics of Immunology Immunotechniques	2019	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation. 4. Apply knowledge in disease diagnosis through serological tests.

25	Open Elective (b)	<i>Immunotechniques and their Applications</i>	2019	<ol style="list-style-type: none"> 1. To purify and analyse the antigens and antibodies. 2. To apply different Hybridization techniques and ELISA, RIA. 3. To detect various diseases by application of antisera. <p>4. To engineer antibodies and catalytic antibodies and produce drugs to allergies.</p>
26	Core 1	<i>Genetic Engineering</i>	2019	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
27	Core 2	<i>Technical Writing, Biostatistics and Bioinformatics</i>	2019	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis.
28	Core 3 P	<i>Practical related to Clinical Immunology, Biostatistics and Bioinformatics</i>	2019	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different

				antigens
29	Core 4	<i>Project Work</i>	2019	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing
30	Generic Elective (a)	<i>Clinical Immunology</i>	2019	<ol style="list-style-type: none"> 1. Understand different types of immunity and components of the Immune System. 2. Gain knowledge on auto immune diseases, Animal models used to study them and the treatment for them. 3. Familiar with Clinical manifestation of graft rejection, general immunosuppressive therapy and immune tolerance to allografts. 4. Acquire the knowledge on oncogenes, Psychoimmunology and neuroimmunomodulation
31	Generic Elective (b)	<i>Applied And Molecular Immunology</i>	2019	<ol style="list-style-type: none"> 1. Develop skill in production of monoclonal antibodies. 2. How better enzyme immobilization enhances its activity and their industrial and clinical applications. 3. Familiar with different types of vaccines and how they help in prevention of diseases. 4. Acquire the knowledge on IPR and procedures for patent filing
32	General Elective (C)	<i>Immunopharmacology</i>	2019	<ol style="list-style-type: none"> 1. Understand about drug receptors, pharmacodynamics, pharmacokinetics, drug biotransformation. 2. Acquire knowledge on Immunomodulation therapy, malignancy therapy. 3. Gain knowledge on Prostaglandins, thromboxanes, leukotrienes and inhibitors of these molecules formation. 4. Familiar with Nitric oxide and its immunological effects.
33	Open Elective a	<i>Research Methodology</i>	2019	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Acquire hands on training on various computational tools and

				<p>techniques.</p> <p>3. Learn to apply hypothesis testing via some of the statistical distributions.</p> <p>4. To acquire knowledge on research proposals and motivate students towards research</p>
34	Open Elective (b)	<i>Immunological Diseases and Therapeutics</i>	2019	<p>1. Maintain the Clinical Immunology lab with all required standards.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on different types of immunodeficiencies, their treatment and about autoimmune disorders.</p> <p>4. Familiar with Clinical manifestation in graft acceptance or rejection and how immunosuppressive therapy is useful. And about cancer immunotherapy.</p>

30. Botany

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2019	<p>1. The student able to distinguish different species of lower plant groups.</p> <p>2. Cultivation methods of Algae for industrial production of Single Cell Proteins, Agar Agar ,carragin and Nutraceuticals.Discuss the importance of morphological structure, classification, reproduction and economic importance of Algae.</p>
	BOT-102	Taxonomy of Angiosperms	2019	<p>1) Plant identification skills</p> <p>2) Herbaria preparation and documentation.</p>
	BOT-103	Microbiology	2019	<p>1. Isolation and identification of Pathogenic and Non-Pathogenic micro-organisms.</p> <p>2. Methods of cultivation of economically/industrially important</p>

				<p>microorganisms.</p> <p>3. Plant disease identification and control methods.</p>
	BOT-104	Human Values and Professional Ethics - I	2019	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2019	<ol style="list-style-type: none"> 1) Identification of different Algal forms 2) Morphological description and use of Floral Keys for plant identification.
	BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2019	<ol style="list-style-type: none"> 2. Isolation, culture and staining methods for identification of micro-organisms. 3. Diagnosis of Plant diseases based on symptoms and control methods. 3. Histology of vegetative and reproductive structures and isolation
	BOT-201	Plant Ecology	2019	<ol style="list-style-type: none"> 1) Concepts of Ecology Students, relation between biotic and abiotic factors in an ecosystem. 2) Interaction between biotic communities and ecological energetics 3) Environmental pollution, Global warming and Environmental protection strategies and green energy production
	BOT-202	Plant Biochemistry and Metabolism	2019	<ol style="list-style-type: none"> 1) Biosynthesis of plant primary metabolites and chemistry. 2) Plant physiological processes water relation, plant nutrition and energy metabolism, 3) Metabolic changes in response to biotic and abiotic stress

	BOT-203	Plant Development and Reproduction	2019	<ol style="list-style-type: none"> 1. Wood formation and types 2. Reproductive structures. Mode of Reproduction
	BOT-204	Human Values and Professional Ethics - II	2019	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2019	<ol style="list-style-type: none"> 1. Plant metabolite analysis and metabolic enzyme activity 2. Methods for Phytodiversity analysis.
	BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2019	<ol style="list-style-type: none"> 1) Plant communities 2) Methods for analysis of environmental pollutants 3) Designs of waste water treatment plants. 4) Assessment of effect of Global warming on Plant systems 5) Study of chromosomal morphology and behavior in Mitosis and Meiosis 6) Practical Problem solving on genetic concepts
	BOT-301	Molecular Biology And Techniques	2019	<ol style="list-style-type: none"> 1. Nucleic acids properties and mechanism of DNA replication and damage repair, and Chromatin organization and Cell Cycle regulation 2. Gene expression, processing of Transcripts and Proteins, and mechanisms of regulation of gene expression in Prokaryotes and Eukaryotes. 3. Principles of Microscopy, Nucleic acid and protein separation and identification techniques and methods

	BOT-302	Biodiversity and Conservation	2019	<ol style="list-style-type: none"> 1. Knowledge on Phytodiversity, biodiversity centres and types of Biodiversity. 2. Phytodiversity analysis using Remote sensing 3. Causes for the loss of phytodiversity and conservation strategies
	BOT-303 IE	Biosystematics	2019	<ol style="list-style-type: none"> 1. Biosystematic Categories, 2. Omega Taxonomy 3. Taximetrics and Concept of Species
	BOT-304 IE	Molecular Plant Pathology	2019	<ol style="list-style-type: none"> 1. Symptoms based Diagnosis of Plant Diseases 2. Methods of Plant Disease Management and pest control
	Abot-306	Computer Applications and Bioinformatics	2019	<ol style="list-style-type: none"> 1. Computer Operating systems and MS Office 2. The biological databases and Databases 3. Bioinformatics, tools and its applications.
	BOT-307 IE	Plants and Human Welfare	2019	<ol style="list-style-type: none"> 1. Food Yielding Plants as a source of food, fiber and timber. 2. Plants used in curing human diseases and other ailments in traditional medical systems and Veterinary diseases 3. Spices and condiments, Non timber forest products. 4. Preparation and application of Bio fertilizers, Bio pesticides, Bio insecticides, mushroom cultivation and plant based preservatives
	BOT-308 IE	Organic Farming and Mushroom Cultivation	2019	<ol style="list-style-type: none"> 1. Different types of compost preparation and their Nutritive value. 2. Biofertilizers and organic preparations, their marketing and farm management. 3. Vermicompost Technology 4. Identification of types of edible and poisonous mushrooms. 5. Method of cultivation of mushrooms and diseases management

	BOT-309 IE	Gardening and Nursery Techniques	2019	<ol style="list-style-type: none"> 1. Nurseries development and Management and Garden designing for different plant groups 2. <i>In vivo</i> and <i>in vitro</i> plant propagation methods 3. Plant nutrition and protection 4. Types of gardens and nurseries
	Practical-I	Molecular Biology And Techniques ; Biodiversity and Conservation	2019	<ol style="list-style-type: none"> 1.. Study of Chromosomal Behavior during Mitosis. 2. Isolation of DNA, RNA and proteins, Quantitative estimation 3. Assignments on DNA structure, Replication and Gene expression 4. Methods for Phytodiversity analysis. 5. Plant diversity conservation methods
	Practical-II	Biosystematics / Molecular Plant Pathology	2019	<p>Biosystematics</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Molecular Plant Pathology</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium
	BOT-401	Molecular Genetics & Genomics and Proteomics	2019	<ol style="list-style-type: none"> 1. Genetic basis of inheritance of genes and their mapping in eukaryotes and microbes 2. Molecular marker techniques and construction of genetic and

				<p>physical maps.</p> <ol style="list-style-type: none"> 3. Whole genome sequencing strategies, and structural and functional annotation. 4. Principles and methods of Transcriptome and Proteome analysis. 5. Mechanisms of evolution of genomes, New genes and proteins and construction of Phylogenetic trees. 6. Structural organization of plant genomes, Arabidopsis and rice genomes and applications of genome projects.
	BOT-402	Plant Biotechnology	2019	<ol style="list-style-type: none"> 1. Techniques of Plant Tissue Culture and Applications. 2. Process of r-DNA technology 3. Production of genetically modified crops and Achievements
	BOT-403 IE	Molecular Plant Physiology	2019	<ol style="list-style-type: none"> 1. 1.Signal transduction pathways and Senescence 2. 2.Molecular mechanism of Photosynthesis 3. Synthesis and application of Nanomaterials. 4. Molecular Physiology of Stress and Flowering
	BOT-404 IE	Horticulture and Agricultural Biology	2019	<ol style="list-style-type: none"> 1. Propagation methods for horticultural crops 2. Soil science and fertility management for horticultural crops. 3. Seed production technology of horticultural crops.
	BOT-405 IE	Ethnobotany and Phytomedicine	2019	<ol style="list-style-type: none"> 1. Ethnobotanical knowledge 2. Medicinal plant Cultivation, Multiplication, Collection, Processing and Marketing 3. Sources of Plant Medicines, Formulations, Diagnostic features and their Biological activity.
	Practical – I	Molecular Genetics & Genomics and Proteomics; Plant Biotechnology	2019	<ol style="list-style-type: none"> 1) Isolation of genomic DNA and RNA and Quantification by Spectrophotometry. 2) Preparation of DNA denaturation curve 3) Restriction digestion of DNA, Agarose Gel Electrophoresis 4) PCR amplification of DNA. and RAPD analysis. 5) Precipitation of proteins ,Estimation of protein.

				<ul style="list-style-type: none"> 6) Determination of Isoelectric Point of proteins 7) Separation of proteins by SDS-PAGE and size determination 8) Problems related to genomics, proteomics and molecular evolution 9) Establishment of callus, organ and cell cultures
	Practical - II	Molecular Plant Physiology; Horticulture and Agricultural Biology; Ethnobotany and Phytomedicine	2019	<p>BOT-403 IE : Molecular Plant Physiology</p> <ul style="list-style-type: none"> 1. Extraction and Estimation of Chlorophyll pigments. 2. Assay of enzyme activity 3. Estimation of Carbohydrate, proteins and separation 4. Seed viability and germination 5. Metabolite accumulation under stress <p>BOT-404 IE: Horticulture and Agriculture Biology</p> <ul style="list-style-type: none"> 1. Isolation, Characterization and Identification of Rhizobium 2. Outdoor cultivation of Blue green Algae 3. Vermicompost production 4. Multiplication of VAM and Preparation Biofertilizers; 5. Establishment of nursery, different containers, soil transplantation techniques. 6. Plant propagation – layering, cutting, grafting. 7.. Layout and Designing of gardens and Lawns. <p>BOT-405 IE: Ethnobotany and Phytomedicine</p> <ul style="list-style-type: none"> 1. Recording medicinal practices and herbal formulations of tribal medicine by interviews and field study and preparation of report. 2. Development of medicinal plant nurseries in botanical garden. 3. Practical Methods of Cultivation, Propagation, Conservation and Protection of important Medicinal plants to develop familiarity. 4. Micro-propagation of Medicinal plants and Production of

				<p>Callus from different Explants for Specific Biologically active Ingredients.</p> <p>5. Practical demonstration of collection, processing and storage of Plant Medicines.</p> <p>6. Demonstration of drug Formulation and Herbal cosmetics.</p> <p>7. Organoleptic examination and physical and chemical properties.</p>
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31. Biotechnology

	PROGRAMME	COURSE CODE	COURSE TITLE	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	M.Sc. Biotechnology	BTH 101	Structure and Functions of Biomolecules	2019	<ol style="list-style-type: none"> 1. Understand the classification of carbohydrates and their biochemical functions. 2. Correlate the reactions of amino acids that are basis for identification tests and biochemical pathways. 3. Know the structure of different classes of lipids and their roles in biological systems. 4. Comprehend the structure and functions of nucleic acids
		BTH 102	Advanced Tools and Techniques	2019	<ol style="list-style-type: none"> 1. Learn about various techniques for isolation and concentration of macromolecules. They will also understand the principles and applications of different Microscopes 2. Understand the techniques of chromatography, centrifugation and electrophoresis 3. Achieve a basic understanding of characterization of biomolecules by different

					<p>Spectroscopic techniques</p> <p>4. They learn safety measures in handling radioisotopes and familiarize with the various radioisotope tracer techniques and their role in biology.</p>
		BTH 103P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2019	1. Acquire the skill to perform experiments related to Biochemical preparations and advanced tools and techniques
		BTH 104P	Practicals related to Microbiology and Immunology	2019	1. Obtain the skill to perform experiments related to Microbiology and Cell Biology
		BTH 105	Microbiology and Immunology	2019	<p>5. Acquire the knowledge on classification and structure of different microorganisms</p> <p>6. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures</p> <p>3. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
		BTH 106	Human values and Professional ethics-I	2019	1. Learn the importance of Human values and Professional ethics
		BTH 201	Enzymes and Intermediary Metabolism	2019	<p>1. Gain knowledge on different enzymes and their significance</p> <p>2. Correlate how the living organisms exchange energy and matter with the surroundings for their survival, and store free energy in the form of energy-rich compounds</p> <p>3. Recognize how the catabolic breakdown of the substances is associated with release of free</p>

					energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways 4. Apply the knowledge of metabolic pathways to biotechnological and biochemical research.
		BTH 202	Molecular Biology	2019	1. Understand the biochemical composition and genome organization in living cells 2. Learn about the mechanism of tissue specific transcription and role of RNA polymerases 3. Appreciate the correlation of genetic code with protein synthesis in prokaryotic and eukaryotic cells. 4. Gain insights of mechanism of gene expression and regulations
		BTH-203P	Practicals related to Enzymology & Molecular Biology	2019	Learn the skill to perform experiments related to Enzymology and Molecular Biology
		BTH-204P	Practicals related to Biostatistics and Bioinformatics	2019	Learn the skill to perform experiments related to Immunology and analyze data using various biostatistical methods.
		BTH 205	Research Methodology, Biostatistics and Bioinformatics	2019	4. Discuss the various steps involved in conducting research 5. Learn to apply hypothesis testing via some of the statistical distributions 6. Develop understanding about Biological data and database search tools 7. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
		BTH 206	Human values and Professional ethics-II	2019	Learn the importance of Human values and Professional ethics

		BTH 301	Genetic Engineering	2019	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes 2. Acquire knowledge on vectors for construction of genomic libraries and cDNA libraries 3. Understand the mechanism of cDNA synthesis 4. Know the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research.
		BTH-302	Cell and Tissue culture	2019	Gain the knowledge regarding plant and animal cell cultures. Get the skill to perform micropropagation.
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2019	Learn the skill to perform the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research
		BTH 304 a.	Bioprocess Engineering and Technology	2019	<ol style="list-style-type: none"> 1. Handle the axenic cultures of industrially important microbes and appreciate the relevance of microorganisms from industrial context. 2. Gain an overview on design, operations and types of fermentation systems 3. Calculate yield and production rates in a biological production process, and also interpret data 4. Apply knowledge on separation and purification of end products of fermentation
		BTH 304 b.	Legal, Ethical and Implications of Biotechnology	2019	<ol style="list-style-type: none"> 1. Develop awareness on types IPR and patenting process 2. Understand legal and ethical controversies in biotechnological innovations 3. Apply knowledge in providing safety of food,

					<p>water and environment</p> <p>4. Gain overview of GM crops and microbes and their impact on environment</p>
		BTH 304 c.	Food and Industrial Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire knowledge on food preservation, processing and control measures for food poisoning 2. Establish indoor and outdoor cultivation units for algal cultivation 3. Learn effective management of solid waste for energy production. 4. Appreciate the industrial role of microorganisms in production of biomolecules
		BTH 305 a	Plant Tissue Culture	2019	<ol style="list-style-type: none"> 1. Learn important milestones in the plant tissue culture and understand the concepts and principles of Plant tissue culture. 2. Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somatic embryogenesis, synthetic seeds and applications. 3. Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. 4. Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization.
		BTH 305 b	Bioethics	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on IPR and procedures for patent filing 2. Understand the Legal and Ethical aspects of gene therapy - cloning - Manipulation of

					<p>human genome -Technology transfer.</p> <ol style="list-style-type: none"> Learn role of Government, Industries and society in promoting, accepting and regulating the rDNA research Develop understanding on Environmental and Health aspects of Biotechnology
		BTH 305 c	Bioinformatics	2019	<ol style="list-style-type: none"> Develop understanding about Biological data and database search tools Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis Learn about pathway and enzyme databases, Sequence submission tools Develop understanding on protein folding and its significance
		BTH 401	Environmental Biotechnology	2019	<ol style="list-style-type: none"> Learn the relation between biotic and abiotic factors in different ecosystem models and predict how changes in free energy availability affect ecosystems. Appreciate the role of microorganisms in biodegradation and pollution detection Develop skill on large scale production and applications of bio pesticides and bio fertilizers fin agriculture Apply knowledge on solid waste management and reclamation of waste water
		BTH 402	Plant Biotechnology	2019	<ol style="list-style-type: none"> Develop skill in production of transgenic plants resistant to biotic and abiotic stress Apply knowledge for industrial production of plant metabolites Cultivate the micro and macro algae of

					commercial importance on large scale 4. Identify different plant pathogens and apply biological control methods
		BTH 403	Project work	2019	1. Select the appropriate research design and develop appropriate research hypothesis for a research project and acquire hands on training on various tools and techniques employed in executing the project.
		BTH 404 a	Pharmaceutical Biotechnology	2019	1. Gain knowledge on preparation and formulations of different drugs 2. Develop skill on commercial production of pharmaceutical products for human welfare 3. Learn the techniques of drug validation and vaccine production 4. Understand the bioethical principle, values, concepts and social and judicial implications of pharmaceutical biotechnology
		BTH 404b	Animal Biotechnology	2019	Understand the organization of reproductive organs and advances in contraception research 2. Learn the techniques of In Vitro Fertilization and artificial insemination 3. Develop skill in molecular techniques for production of transgenic animals 4. Apply knowledge on molecular farming for production of vaccines and hormones
		BTH 404c	Applications Biotechnology	of 2019	1. Acquire the knowledge on applications of plant, animal and environmental biotechnology 2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3. Establish and maintain cell lines for vaccine

					production 4. Apply knowledge on waste management and recycling for environmental protection
		BTH 404d	Practicals Related to Environmental Biotechnology & Plant	2019	1. Learn the techniques related to Environmental and Plant biotechnology
		BTH 405a	Tools in Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on analysis of DNA replication to map site specific points of replication 2. Learn to apply DNA microarrays to detect replication origins 3. Understand the functions of helicase and polymerase in DNA replication 4. Acquire knowledge on sophisticated programmed of genome replication
		BTH 405b	Immunology	2019	<ol style="list-style-type: none"> 1. Out line, compare and contrast the key mechanism of innate and adaptive immunity 2. Apply knowledge in disease diagnosis through serological tests 3. Develop skill in production of monoclonal antibodies 4. Gain knowledge on undesirable immunological reactions and their complications in health management
		BTH 405c	Applications of Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on applications of plant, animal and environmental biotechnology 2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3. Able to establish and maintain cell lines for vaccine production 4. Apply knowledge on waste management and recycling for environmental protection

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32. Chemistry

Analytical Chemistry

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry I	2019	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2.	CHE-102	Organic Chemistry I	2019	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereo

				<p>controlled reactions</p> <ol style="list-style-type: none"> To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3.	CHE-103	Physical Chemistry- I	2019	<ol style="list-style-type: none"> To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification

4.	CHE-104	Inorganic Practical- I	2019	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
5.	CHE-105	Organic Practical-I	2019	<ol style="list-style-type: none"> 1. .To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules.
6.	CHE-106	Physical Practical I	2019	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
7.	CHE-107	General Chemistry-I	2019	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
8.	CHE-108	Human Values and Professional Ethics – I	2019	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct.

				<ol style="list-style-type: none"> 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
9.	CHE - 201	Inorganic Chemistry II	2019	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reaction
10.	CHE-202	Organic Chemistry II	2019	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions.

				<ol style="list-style-type: none"> To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. To understand the structural elucidation and synthesis of alkaloids using specific reagents.
11.	CHE -203	Physical chemistry II	2019	<ol style="list-style-type: none"> To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
12.	CHE 204	Inorganic Chemistry	2019	<ol style="list-style-type: none"> To separate and determine the two component mixtures. To acquire knowledge in the preparation of metal complexes
13.	CHE 106	Core practical II: Organic Chemistry	2019	<ol style="list-style-type: none"> To familiarize with binary mixture separation and to gain hands-on-experience in purification

				of the 2. To get knowledge about the chemical behavior of different components and mechanisms
14.	CHE 206	Core practical II: Physical Chemistry	2019	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
15.	CHE 207	General Chemistry II	2019	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
16.	CHE 208	Human Values and professional ethics-II	2019	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
17.	CHE-AC-	Inorganic Spectroscopy	2019	

	301	and Thermal Methods of Analysis		<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
18.	CHE AC 303 & 304	Core-Practical: Classical Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis 2. To gain knowledge on chemistry of alloys 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations
19.	CHE-AC-305A Chemistry III	Organic Chemistry III	2019	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity,

				<p>stereoselectivity and substrate controlled auxillary controlled reactions</p> <p>4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.</p>
20.	CHE-AC-305B	Physical Chemistry III	2019	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
21.	CHE AC 306	Spectral Techniques	2019	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups

22.	CHE AC 306	Chromatographic Techniques	2019	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase.
23.	CHE-AC-401	Quality Control and General Principles	2019	<ol style="list-style-type: none"> 1. To diagnose problems in the quality improvement process and Explain each total quality implementation phase 2. To know about theoretical basis for the use of organic reagents in inorganic analysis. 3. To understand different types of kinetic methods and their evaluation and to determine the kinetics of enzyme 4. To understand the oxidation reactions with Ce (IV) sulphate solutions and applications of complexometric titrations
24.	CHE-AC 402	: Instrumental Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).

				<ol style="list-style-type: none"> To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I₂ liberations and Ce⁴⁺ liberation in solutions
25.	CHE AC 403	Core practical I: Analytical Chemistry- Practical	2019	<ol style="list-style-type: none"> Understand the common laboratory techniques including separation techniques Polarography, atomic absorption spectroscopy in both emission and absorption mode. Gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures Familiarize with interpretation of data to structures by NMR.
26.	CHE AC 404	Project Work	2019	<ol style="list-style-type: none"> Perform experiments, collection and evaluation of data Interpretation of results while adhering to scientific principles of responsible and ethical behaviour Analysing and compiling the data and results in a chronological order in the form of dissertation. Preparation of dissertation
27.	CHE-AC-405	Applied and Environmental Aspects	2019	<ol style="list-style-type: none"> Have an idea about preparation of sampling, decomposition, separation and preconcentration of metal ions etc. Gain experience on agrochemicals and

				<p>fertilizers and their analysis</p> <ol style="list-style-type: none"> 3. Have an idea on the analysis of fuels, alloys and explosives 4. Experience with environmental pollution monitoring techniques
28.	CHE-AC-406	Bioinorganic, Bioorganic, Biophysical Chemistry	2019	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
29.	CHE AC 406A	Drug Chemistry	2019	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
30.	CHE AC 406 B	Electroanalytical Techniques	2019	<ol style="list-style-type: none"> 1. Know how to interpret potentiometry and conductometry 2. Know the Interpretation of results while adhering to DC Polarography 3. Know the Analysing and compiling the data and results in polarography . 4. Familiarize Types of ion sensitive electrodes

M.Sc., Environmental Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry- I	2019	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
	CHE-102	Organic Chemistry I	2019	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids

CHE-103	Physical Chemistry- I	2019	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics. 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2019	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations. 2. To familiarize with techniques of titration and calculation of errors
CHE-105	Organic Practical-I	2019	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups. 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
CHE-106	Physical Practical I	2019	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data

	CHE-107	General Chemistry-I	2019	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
	CHE-108	Human Values and Professional Ethics - I	2019	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
	CHE-201	Inorganic Chemistry- II	2019	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry -II	2019	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E₁, E₂ and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the

				<p>limitations and applications of reactions</p> <p>3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.</p>
	CHE-203	Physical Chemistry- II	2019	<p>1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems</p> <p>2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants</p> <p>3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem</p> <p>4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2019	<p>1. To separate and determine the two component mixtures</p> <p>2. To acquire knowledge in the preparation of metal complexes</p>
	CHE-205	Organic Practical-II	2019	<p>1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the</p> <p>2. To get knowledge about the chemical behavior of</p>

				different components and mechanisms.
	CHE-206	Physical Practical -II	2019	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsagar equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
	CHE-207	General Chemistry-II	2019	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2019	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-EC-301	Physical Chemistry III	2019	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman

				<p>spectroscopy</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE-EC-302	Spectroscopy Applications	2019	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-EC-303	Water Analysis	2019	<ol style="list-style-type: none"> 1. To get an idea about water analysis 2. To understand the basic principles of soil analysis 3. To familiarize with instrumentation of potentiometric techniques 4. To gain knowledge on flame photometry and its applications
	CHE-EC-304	Instrumental Methods of Analysis-I	2019	<ol style="list-style-type: none"> 1. To get an idea about water analysis 2. To understand the basic principles of soil analysis 3. To familiarize with instrumentation of potentiometric techniques 4. To gain knowledge on flame photometry and its applications
	CHE-305	<p>(a) Organic Chemistry III</p> <p>(b) Inorganic Spectroscopy & Thermal Methods</p>	2019	<p>305 A</p> <ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a

		of Analysis (c) Green Chemistry		<p>variety of complex molecules.</p> <ol style="list-style-type: none"> To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds. <p>305 B</p> <ol style="list-style-type: none"> To know about TG and DTA and applications of different scanning calorimetry. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
CHE-306	(a) Spectral Techniques or (b) Chromatographic Techniques		2019	<p>306 A</p> <ol style="list-style-type: none"> To know the basic principles of spectroscopy To familiarize with the analysis of various functional groups by using different spectroscopic techniques. To Understand the applications of AAS. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups

				<p>306 B</p> <ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
	CHE-EC-401	Water pollution Monitoring and Environment laws	2019	<ol style="list-style-type: none"> 1. Know about nuclear fission and fusion, uses of solar energy in space heating and water heating, hydropower and water heating, hydropower and production of ethanol from indirect solar energy. 2. Learn physical and chemical properties of water and water complexation in natural and waste water and to understand about global warming, ozone depletion, green house effect and acid rains. 3. Acquire knowledge on composition of inorganic and organic contaminants in soil, soil corrosion and industrial applications of green chemistry. 4. Get knowledge on various methods of solid waste collection and its disposal
	CHE-EC-402	Air pollution, control Methods-Noise and Thermal pollution	2019	<ol style="list-style-type: none"> 1. Acquire knowledge on disease causing agents in water 2. Learn about the removal of suspended and dissolved solids present in waste water 3. Understand different uses of micro-organisms in environmental protection 4. Know different world life acts such as forest conversion act, water control pollution act and air prevention and control act
	CHE-EC-403	Instrumental Methods of analysis-II	2019	<ol style="list-style-type: none"> 1. To know the basic principles of conductometry and analysis of acids and halides. 2. Colorometric estimation of iron and manganese.

				<p>3. To have an idea about working principles of IR, AAS, Spectrofluorimetry, Gas chromatography and HPLC.</p> <p>4. To familiarize with interpretation of data</p>
	CHE-EC-404	Project work	2019	<p>1. To identify research problem, propose the hypothesis and to collect literature.</p> <p>2. To perform research designs & experiments</p> <p>3. To tabulate research result.</p> <p>4. To conclude research outcomes in the form of dissertation</p>
	CHE-405	<p>(a) Energy, Environment and Soils</p> <p><i>(b) Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2019	<p>405 A</p> <p>1. Acquire knowledge on air pollutants, air pollution sampling measurements and analysis caused due to sulphur dioxide, carbon monoxide, nitrogen dioxide, oxidants, ozone, hydro carbons and particulate matter.</p> <p>2. Learn about different control methods and adsorption of solids and liquids, gas analysis eluents viz., nitrogen oxides, carbon monoxide and hydrocarbons.</p> <p>3. Understand pollution caused by vehicle emission, different industries, cement plants, steel mills and petroleum refineries.</p> <p>4. Know about noise and thermal power project pollutions and their effect on human health.</p> <p>405 B</p> <p>1. Gain knowledge on metallo proteins in electron transfer processes.</p> <p>2. Know the applications of trace metal ions and metal ions as chelating agents in medicine</p> <p>3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.</p> <p>4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer</p>

				parameters
	CHE-406	(a)Drug Chemistry or (b) Electroanalytical Techniques	2019	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry. 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes.

M.Sc., Inorganic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2019	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of

				different metal carbonyls, synergistic effect and 18 electron rule.
	CHE-102	Organic Chemistry I	2019	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2019	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
	CHE-104	Inorganic Practical- I	2019	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets

				<p>analytical data and will make scientific claims that are supported by the observations.</p> <p>2. To familiarize with techniques of titration and calculation of errors</p>
	CHE-105	Organic Practical-I	2019	<p>1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups</p> <p>2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules</p>
	CHE-106	Physical Practical I	2019	<p>1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different</p> <p>2. To calibrate the statistical data</p>
	CHE-107	General Chemistry-I	2019	<p>1. To know about mean and median values, standard deviation and coefficient of variation.</p> <p>2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS</p>
	CHE-108	Human Values and Professional Ethics – I	2019	<p>1. To know about the needs and importance of professional ethics.</p> <p>2. To analyze nature of Values, basic Moral Concepts character and Conduct</p> <p>3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya.</p> <p>4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics</p>

CHE-201	Inorganic Chemistry- II	2019	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams. 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods. 4. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods.
CHE-202	Organic Chemistry -II	2019	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents
CHE-203	Physical Chemistry- II	2019	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems. 2. To learn Gibbs adsorption isotherm, BET equation

				<p>and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants.</p> <p>3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem.</p> <p>4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2019	<p>1. To separate and determine the two component mixtures.</p> <p>2. To acquire knowledge in the preparation of metal complexes</p>
	CHE-205	Organic Practical-II	2019	<p>1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the</p> <p>2. To get knowledge about the chemical behavior of different components and mechanisms</p>
	CHE-206	Physical Practical -II	2019	<p>1. To study the determination of cell constant and verification of Onsagar equation, strength of strong</p> <p>2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry</p>
	CHE-207	General Chemistry-II	2019	<p>5. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and</p> <p>6. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC</p>
	CHE-208	Human Values and Professional Ethics – II	2019	<p>1. To understand the concepts of human values, responsibilities of family values and status of women in family and society.</p>

				<ol style="list-style-type: none"> 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-IC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
	CHE-IC-302	Organic Spectroscopy and Applications	2019	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-IC-303 and CHE-IC-304	Core practical I & II Inorganic Chemistry	2019	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental

				<p>methods of analysis.</p> <ol style="list-style-type: none"> To familiarize with the analysis of organometallic complex salts. To Understand the complexity, theory and working principle of colourimetry. To gain knowledge on analysis of organic components
	CHE-305A	Organic Chemistry III	2019	<ol style="list-style-type: none"> To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds
	CHE-305B	Physical Chemistry III	2019	<ol style="list-style-type: none"> To know the determination of Character Co-ordinate of C_2V point group based on $3N$ Coordinates and to learn the Mutual exclusion Principle To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches,

				<p>selection rules and Vibrational- rotational Raman spectroscopy.</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE IC 306 A	Spectral Techniques	2019	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE IC 306 B	Chromatographic Techniques	2019	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase
	CHE-IC-401	Coordination compounds, Organo metallic chemistry & Chemistry of non-transition elements	2019	<ol style="list-style-type: none"> 1. To Gain an extensive knowledge about dinitrogen complexes of Ru(II), Os(II), Co(I), Mo(0) and dioxygen complexes of Ir(I) and Rh(I) and on cycloheptatriene and tropylium complexes of oxidative, reductive elimination reactions 2. To understand mechanism, stereochemical aspects and regeneration of catalyst in olefin hydrogenation (Wilkinson's catalyst), olefin oxygenation (Wacker process or Smidt reaction), Olefin hydroformylation and Fischer –Tropsch process.

				<ol style="list-style-type: none"> 3. To study the examples of metal complexes having metal-metal single or multiple bonds and analyse the spectroscopic evidences for the presence of metal-metal bond. 4. To understand the synthesis and structures of boranes, carboranes, borazines, silicates carbides, peroxo compounds and inter halogens, pseudhalides
	CHE-IC-402	Instrumental Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis. 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I- and S₂-)by using I₂ liberations and Ce⁴⁺ liberation in solutions
	CHE-IC-403	Instrumental Methods of Analysis-II	2019	<ol style="list-style-type: none"> 1. To understand the common laboratory techniques including separation techniques. 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. To gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures. 4. To Familiarize with interpretation of data to structures by NMR.

	CHE-IC-404	Project work	2019	<ol style="list-style-type: none"> 1. Ability to perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour. 3. Analysing and compiling the data and results in a chronological order in the form of dissertation 4. Preparation of dissertation.
	CHE-405	<p>(a) Solid state and Photo Chemistry</p> <p>(b) <i>Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2019	<p>405 A</p> <ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions. <p>405 B</p> <ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron

				<p>transfer processes.</p> <ol style="list-style-type: none"> 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2019	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs. <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Organic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2019	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes.

				<ol style="list-style-type: none"> 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule
	CHE-102	Organic Chemistry I	2019	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2019	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process,

				Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2019		<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
CHE-105	Organic Practical-I	2019		<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
CHE-106	Physical Practical I	2019		<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
CHE-107	General Chemistry-I	2019		<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
CHE-108	Human Values and Professional Ethics - I	2019		<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts

				character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
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	CHE-201	Inorganic Chemistry- II	2019	1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry -II	2019	1. To familiarize the mechanisms of E ₁ , E ₂ and E _{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the

				<p>effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.</p>
	CHE-203	Physical Chemistry- II	2019	<p>5. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems</p> <p>6. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants</p> <p>7. To identify Relation between order of a finite group and its subgroup, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem</p> <p>8. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2019	<p>3. To separate and determine the two component mixtures</p> <p>4. To acquire knowledge in the preparation of metal complexes</p>
	CHE-205	Organic Practical-II	2019	<p>3. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the</p> <p>4. To get knowledge about the chemical behavior of different components and mechanisms.</p>
	CHE-206	Physical Practical -II	2019	<p>3. To study the determination of cell constant and verification of Onsagar equation, strength of strong</p> <p>4. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.</p>
	CHE-207	General Chemistry-II	2019	<p>3. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and</p>

				4. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2019	<ul style="list-style-type: none"> 5. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 6. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 7. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 8. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-OC-301	Organic Chemistry III	2019	<ul style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds
	CHE-OC-302	Organic Spectroscopy and Applications	2019	<ul style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of

				different molecules which are unique
	CHE OC 303 & 304	Core practical I: Organic Estimations - Practical	2019	<ol style="list-style-type: none"> 1. To gain knowledge about the estimation/percent purity of different organic molecules. 2. To get hands-on-experience with the synthesis and determination of concentrations and purity 3. To acquire knowledge in handling of toxic chemicals in multi step preparation of biologically important 4. To gain experience in the proposal of synthetic routes to functionalized derivatives
	CHE-OC- 305 A	Inorganic Spectroscopy and Thermal Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To gain knowledge on chemistry of alloys. 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations.
	CHE-OC- 305 B	Physical Chemistry III	2019	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE OC 306 (A)	Spectral Techniques	2019	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of

				organic compounds and common functional groups
	CHE OC 306 (B)	Chromatographic Techniques	2019	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase.
	CHE-OC-401	Organic synthesis I	2019	<ol style="list-style-type: none"> 1. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents 2. Learn about photolytic reactions of carbonyl compounds, conjugated carbonyl derivatives, olefins, conjugated dienes CO₃:To gain knowledge in the determination of allowed or forbidden of chemical reactions <i>viz.</i>, cycloaddition and 3. Learn the methods of preparation, properties, and industrial applications of various addition and condensation 4. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents
	CHE-OC 402	Organic Synthesis II	2019	<ol style="list-style-type: none"> 1. Familiarize with functionalization and interconversion of functional groups and the concept of organic synthesis by retrosynthetic approach 2. Gain knowledge in the formulation of synthetic routes for naturally occurring drugs. 3. Understand quinoline, acridine and guanidine group of alkaloids as antimalarials and to familiarize with the role of functioning of broad spectrum antibiotics. 4. Acquire knowledge about the classification, properties, structure & conformation and biological functions of peptides/proteins
	CHE OC 403	Core practical I: Spectral Identification of	2019	<ol style="list-style-type: none"> 1. Calculate λ max values. 2. Ascertain functional groups.

		Organic Compounds		<ol style="list-style-type: none"> 3. Interpret the spectral data to the structure and stereochemistry of the molecules. 4. Analyse the fragmentation pattern of the molecules.
	CHE OC 404	Practical II: Project Work	2019	<ol style="list-style-type: none"> 1. Identify the problem, to collect the literature and understanding parameters to design the problem. 2. Perform experiments to synthesize the molecules with desired stereochemistry adopting modern techniques 3. Collect and interpretation of the data to the structures 4. Presentation of the data in the form of dissertation
	CHE-OC-405A	Heterocycles and Natural Products	2019	<ol style="list-style-type: none"> 1. Familiarize with the synthetic routes of five membered heterocycles with two heteroatoms and to justify the site of 2. Acquire knowledge on the synthetic methodologies of benzofused and six membered heterocycles and the effect of 3. Familiarize with the structural elucidation and synthesis of naturally occurring steroids and hormones 4. Know about isolation, structural determination and synthesis of flavonoids and isoflavonoids
	CHE-OC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2019	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE OC 406A	Drug Chemistry	2019	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins 4. Know the Definition, Classification, Nomenclature, Structure

				and Synthesis of anti-inflammatory drugs.
	CHE 406B	OC	Electroanalytical Techniques	2019
				<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Physical Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHE-101	INORGANIC CHEISTRY I	2019	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions. 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2	CHE-102	Organic Chemistry I	2019	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types

				<p>of aromatic substitution reactions, their mechanism and the effect of substituents</p> <ol style="list-style-type: none"> To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3	CHE 104	Core practical I: Inorganic Chemistry	2019	<ol style="list-style-type: none"> To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations To familiarize with techniques of titration and calculation of errors
4	CHE 105	Core practical I: Organic Chemistry	2019	<ol style="list-style-type: none"> To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
5	CHE 106	Core practical I: Physical Chemistry	2019	<ol style="list-style-type: none"> To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different To calibrate the statistical data
6	CHE-107	General Chemistry I	2019	<ol style="list-style-type: none"> To know about mean and median values, standard deviation and coefficient of variation To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS

7	CHE 108	Human Values and Professional Ethics-I	2019	<ol style="list-style-type: none">1. To know about the needs and importance of professional ethics.2. To analyze nature of Values, basic Moral Concepts character and Conduct3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya.4. To understand values of Bhagavd Gita, various –5. /*religions, religious tolerance, Gandhian ethic--
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	CHE - 201	Inorganic Chemistry II	2019	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry II	2019	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring

				<p>opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents</p>
	CHE -203	Physical chemistry II	2019	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE 204	Core practical I: Inorganic Chemistry	2019	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes
	CHE 205	Core practical II: Organic Chemistry	2019	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms

CHE 206	Core practical II: Physical Chemistry	2019	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry
CHE-207	General Chemistry II	2019	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
CHE 208	Human Values and professional ethics-II	2019	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management 4. To familiarize environmental ethics, ethical theory and ecological crisis
CHE-PC-301	Physical Chemistry III	2019	<ol style="list-style-type: none"> 1. To know the determination of Character Coordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches,

				<p>selection rules and Vibrational- rotational Raman spectroscopy</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE-PC 302	Organic Spectroscopy and Applications	2019	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds. 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE PC 303 & 304	Core practical I: Physical Chemistry-practicals I & II	2019	<ol style="list-style-type: none"> 1. To study chemical kinetics of homogeneous solutions 2. To gain knowledge on the determination of different cations by flame photometry 3. To understand the principle and working aspects of conductometric titrations 4. To acquire knowledge on the implementation of colorometric estimations 5. To study chemical kinetics of homogeneous solutions
	CHE PC 305 A	Organic Chemistry III	2019	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules

				<ol style="list-style-type: none"> 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
	CHE-PC- 305 B	Inorganic Spectroscopy and Thermal Methods of Analysis	2019	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR 3. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron
	CHE PC 306 A	Spectral Techniques	2019	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE PC 306 B	Chromatographic Techniques	2019	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques.

				<ol style="list-style-type: none"> 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
	CHE-PC- 401	Electrochemistry	2019	<ol style="list-style-type: none"> 1. Know the techniques of deposition of metals, throwing power simultaneous discharge of cations and methods of corrosion protection 2. Learn about electrochemical Batteries, fuel cells and nickel-cadmium batteries 3. Understand electrical double layer systems, sedimentation potential, null points of metals and zeta potential 4. Calculate electrochemical parameters; familiarize mixed ligand systems and reversible systems
	CHE-PC 402	Thermodynamics, Polymers and Solid-state Chemistry	2019	<ol style="list-style-type: none"> 1. Derive Gibbs Duhem equation and to calculate fugacity and chemical potential 2. Calculate excess free energy and entropy, to draw Hildebrand curves and to correlate excess functions and activity coefficients 3. Learn morphology, T_m and T_g points and to calculate transition temperatures and to identify cross linking in polymers 4. Identify magnetic properties of solids, magnetic materials, superconductors and BCS theory
	CHE PC 403	Core practical I: Inorganic Chemistry - Practical	2019	<ol style="list-style-type: none"> 1. To perform titration of mixture of halides and to draw potentiometry curves 2. To learn amperometric titrations and mixtures by polarography

				<ol style="list-style-type: none"> 3. To Correlation of data obtained from IR, AAS, HPLC and GC 4. To Determination of alkanility and purity by pH metry
	CHE PC 404	Project Work	2019	<ol style="list-style-type: none"> 1. To identify research problems and to collect research literature 2. To propose hypothesis of a research problem 3. To perform research experiments 4. To analyse the data and conclude the research outcomes
	CHE-PC-405A	Chemical Kinetics	2019	<ol style="list-style-type: none"> 1. Draw skrabal pH diagram and to separate unimolecular and bimolecular reactions 2. Study laws of photochemistry, to derive stern-volmer equation 3. Identify chromo potentiometry points and to investigate kinetic currents and isotopic effects 4. Learn photochemical thresholds, chemiluminescence
	CHE-PC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2019	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters

	CHE PC 406A	Drug Chemistry	2019	<ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs 3. Analyzing about prostaglandins. Know the 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs
	CHE PC 406 B	Electroanalytical Techniques	2019	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

33. Environmental Sciences

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ENV-101	Ecology and Environment	2019	<ul style="list-style-type: none"> • Provide solutions to environmental problems using appropriate tools and techniques. • Develop both a quantitative and qualitative understanding of interactions between organisms and their consequences. • Gain the knowledge of functions of organisms and ecosystem.
2	ENV -102	Environmental Chemistry	2019	<ul style="list-style-type: none"> • Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water and soil. • Apply basic chemical concepts to analyze chemical processes involved in different environmental problems. • By knowing pollution levels in the environment best possible fresh environment

				can be created in different methods like afforestation, natural parks and sanctuaries etc., for human concern.
3	ENV-103P	Practical – I	2019	<ul style="list-style-type: none"> • Imparting practical knowledge about estimation of pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples.
4	ENV-104P	Practical-II	2019	<ul style="list-style-type: none"> • Understanding of various alkalinities present in the water sample by volumetric titration linked with theory. • By knowing water pollution potable water can be drawn out and wastewater can be treated. • By knowing various fertility of the soil can be known which is advantage to farmers for agriculture.
5	ENV-105	Environmental Toxicology and Public Health	2019	<ul style="list-style-type: none"> • To understand the role of toxicants in environment, methods used to quantify toxicity, regulations that govern toxic substances and assessment of risks posed by exposure to toxicants. • Inform, educate, and empower people about the potential hazards of toxic substances to environmental and human health. • By knowing the adverse health problems on human beings, safety, preventing measures can be implemented endemic and pandemic diseases can be controlled.
6.	ENV-106	Human Values and Professional Ethics-I	2019	<ul style="list-style-type: none"> • Describe the human values, understand the commitment and responsibility. • They gain the ability to bring harmony to the society. • By studying human values reformation of man and reformation of policy shall be done and

				harmony of environment and society also can be achieved.
7.	EN-201	Energy and Environment	2019	<ul style="list-style-type: none"> • Explain the key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences. • They explain basic competence regarding environmental impacts arising from different energy carriers and technical solutions. • Enrichment of ecosystem will be achieved.
8.	ENV-202	Environmental Pollution	2019	<ul style="list-style-type: none"> • Analyze sources of pollution, exposure pathways, fate and evaluate consequences of human exposure to pollution and its impacts to environmental quality. • Distinguish the effect of pollutants on human health, economy and wild environments. • Pollution free environment for human life will be achieved.
9.	ENV-203P	Practical-I	2019	<ul style="list-style-type: none"> • Describe the amount of pesticide/insecticide in water/vegetable samples. • To find concentration levels of toxicant by use of instrumental techniques • To estimate physicochemical assessments in different water samples
10.	ENV-204P	Practical-II	2019	<ul style="list-style-type: none"> • Identify the concentration of biochemical by using instrumental methods. • To find an amount of LC50 of various metals in organism. • To estimate the growth rate of fauna at various habitat condensations.
11	ENV-205	Instrumental Techniques and Applications	2019	<ul style="list-style-type: none"> • Integrate a fundamental understanding of the

				<p>underlining physics principles as they relate to specific instrumentation used for atomic, molecular, and mass spectrometry, magnetic resonance spectrometry and chromatography.</p> <ul style="list-style-type: none"> • Environmental potentiality will be achieved. This is indirect benefits to the society. • To understand the analysis and level of concentration of different metals through instrumental techniques.
12	ENV-206	Human Values and Professional Ethics-II	2019	<ul style="list-style-type: none"> • Understand the core values that shape the ethical behaviour. • An ability to apply their broad education towards the understanding of the impact of engineering solutions in a global and societal context. • Making the students to full man, understanding the ethical values.
13	ENV -301	Waste Treatment and Management	2019	<ul style="list-style-type: none"> • Describe the components of solid waste management and the laws governing it. • Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes. • Biodegradation of waste through natural and artificial methods will be achieved.
14	ENV -302	Environmental Assessment, Audit and Economics	2019	<ul style="list-style-type: none"> • Explain the concepts about the Environmental Impact Assessment (EIA) and describe the environment laws, aims and the necessity of EIA. • Critically examine assumptions inherent in impact assessment, examine a range of environmental impact assessments and identify and explore impact assessment fields

				<p>and approaches.</p> <ul style="list-style-type: none"> • Understand the sustainable development and controlling environmental pollution.
15	ENV -303	Practical-I	2019	<ul style="list-style-type: none"> • Understand the degradation of natural resources by constructions of various projects. • Understand requirement of oxygen for growth of organisms to break down organic matter in wastewaters. • Describe the low cost wastewater treatment practices in water demand areas.
16	ENV-304	Practical-II	2019	<ul style="list-style-type: none"> • It helps to explain the relationships between variables of the real-world applications. • Develop the programming techniques and the problem solving skills through programming.
19	ENV-305A	Ecotourism and Eco-restoration	2019	<ul style="list-style-type: none"> • Describe the challenging in Eco-Tourism and wildlife tourism. • Understand values of wildlife and minimizing impact on natural ecosystem due to tourism. • It is joyful to public and society; Government economy also will be generated.
18	ENV-305B	Biodiversity Conservation and Management	2019	<ul style="list-style-type: none"> • Systematically understand biodiversity and its vital role in ecosystem function. • Understand the value of biodiversity and current threats to biodiversity. • Describe Environment of nature
19	ENV-305C	Statistics, Computer Applications and Modeling	2019	<ul style="list-style-type: none"> • Analyze data using standard statistical techniques. • Utilize the Internet Web resources and evaluate on-line e-business system. • Environmental analysis, forecasting of the environment can be achieved.
20	ENV-306A	Natural Resources Conservation	2019	<ul style="list-style-type: none"> • Apply theories and methods with

				<p>interdisciplinary approach towards natural resource management.</p> <ul style="list-style-type: none"> • Critically examine the gap in the resource availability, use and conservation. • In conservation of the environment, employment can be generated.
21	ENV-306B	Environmental Education and Sustainability	2019	<ul style="list-style-type: none"> • Demonstrate an integrative approach to environmental issues with a focus on sustainability. • Communicate complex environmental information to both technical and non-technical audiences. • Students will be enriched about the nature.
22	ENV-401	Water Resources and Watershed Management	2019	<ul style="list-style-type: none"> • Understand water's importance as a precious resource. • Provide a basic understanding of the impact of water and water-related issues in a global, economic, environmental and societal context. • Describe the management of water resources through construction of watersheds for future generations.
23	ENV-402	Remote Sensing and GIS	2019	<ul style="list-style-type: none"> • Building a foundation for understanding Remote Sensing and Geographic Information System (RS-GIS) as a powerful tool for geospatial analysis. • Appreciate the application of RS-GIS techniques to the matrices of environment and Resource management. • Future predictions of the environment will be known about weather, cyclones and research etc.,

24	ENV-403	Practical-I	2019	<ul style="list-style-type: none"> • Analyze the multi elements in various wastewater samples. • Understand the rain water harvesting practices. • Identify the water bodies and evaluate effective sensors and advance technique to extract and mapping the features for various applications.
25	ENV-404	Project Work and Comprehensive Viva-Voce	2019	<ul style="list-style-type: none"> • Understand project characteristics and various stages of a project. • Estimate and cost the human and physical resources required and make plans to obtain the necessary resources. • It helps to develop in contextualization of knowledge, critical thinking and can lead to new innovation ideas.
26	ENV-405 A	Disaster Mitigation and Management	2019	<ul style="list-style-type: none"> • Understand the mitigation approaches, their choices and alternatives. • Develop foundations for hazard, risk and vulnerability assessment.
29	ENV-405 B	Environmental Laws, Policies and Legislation	2019	<ul style="list-style-type: none"> • Understanding judicial response to environmental issues in India. • Acquire the ability to evaluate the role of law and policy in conservation and management of natural resources and prevention of pollution.
28	ENV-405 C	Global Environmental Issues	2019	<ul style="list-style-type: none"> • Predicting the consequences of human actions on the web of life, global economy and quality of human life. • Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and

				<p>sustainable development.</p> <ul style="list-style-type: none"> • International issues will be understood.
29	ENV-406 A	Forest Resources and Management	2019	<ul style="list-style-type: none"> • Demonstrate knowledge of forest vegetation modeling and the ability to forecast its development over time using models of forest growth. • Integrate knowledge of basic biology, physical sciences, forest and wildlife ecology, and social sciences into the stewardship of forest resources. • Through forest management national economy will be improved.
30	ENV-406 B	Environmental Management and Sustainable Development	2019	<ul style="list-style-type: none"> • Ability to analyze environmental management in relation to the major principles of sustainable development. • The ability to work effectively to create environmental management analysis outputs of professional quality, both independently and within team environments.

34. Fishery Sciences & Aquaculture

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	AQC 101	Concepts of Aquatic Ecology	2019	<p>i. Understanding the General Characteristics, Principles of classification, Aquatic EcologyCommunities.</p> <p>ii. To understand the various Physical and chemical characteristics of water.</p>

2	AQC 102	Systematics And External Anatomy of Cultivable Organisms	2019	<p>i. Understand the concepts of finfish and shellfish systematics and anatomy.</p> <p>ii.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	AQC 103 A	Fish Nutrition and Water Quality Management	2019	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	AQC: 103 B	Environmental Monitoring and Bio deterioration	2019	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p>

				<p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	AQC- 104A	Coastal Aquaculture	2019	<p>i.The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of</p>

				Amino acids, inborn errors of metabolism.
6.	AQC 104 B	: Ornamental Fish Culture	2019	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2019	
7.	Practical-1 AQC 105	Identification and Morphology of Cultivable Organisms	2019	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due</p>

				<p>to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	Practical-2 AQC106	Fish Nutrition	2019	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	AQC 107	Human Values and Professional Ethics – I	2019	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and</p>

				<p>techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	AQC 201	Principles of Aquaculture	2019	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	AQC 202	Physiology of Cultivable Organisms	2019	<p>i. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>

				<p>ii. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>iii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	AQC 203A	Fresh Water Aquaculture	2019	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	AQC 203B	Capture fisheries	2019	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and</p>

				<p>structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	AQC 204 A	Fishery Economics, Extension and Environmental Management	2019	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	AQC 204 B	Limnology	2019	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be</p>

				<p>analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	Practical-1 AQC205	Soil and Water Characteristics	2019	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and</p>

				<p>techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	Practical-2 AQC206	Physiology of Fin Fish and Shell Fish	2019	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	AQC 206	Human Values and Professional Ethics – II (Audit course)	2019	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	AQC 301	Microbiology and Fish Pathology	2019	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p>

				<p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	AQC 302	Fish Immunology	2019	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases</p>

				in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.
21	AQC: 303A	Cell Biology and Genetics	2019	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
22	AQC 303 B	Bioinformatics In Aquaculture	2019	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
23	Practical's AQC 304	Microbiology and Fish Diseases	2019	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p>

				<p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	Skill oriented course AQC 305	Fish Nutrition Technology	2019	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
25	Open Elective (For other	a)AQC 306A: Fish Processing Technology	2019	<p>i. Learnt about structure, function and organization of Neurons in the Central nervous</p>

	department students)	b) AQC306B: Pollution and Toxicology		<p>system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effective communicate with both specialist and non-specialist audiences/community.</p>
26	AQC 401	Aquaculture Biotechnology	2019	<p>i. Skill development in environmental and occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p>

				vii. To understand how to conserve the wild animals
27	AQC402	Essentials Of Biochemistry	2019	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
28	AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2019	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types</p>

	AQC403B	Aquaculture Engineering		<p>of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
29	Practical's AQC 404	Biotechnology And Biochemical Estimations	2019	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	Multidisciplinary course/ project work AQC405	Project Work / Fieldwork	2019	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
31	Open Elective (For other department students)	General Principles and Practices of Aquaculture	2019	<p>i. Understand the evolution of protein structural motifs and domains and associate this with function;</p>

	AQC 406(A)			<p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
32	AQC 406 (B)	Fish Breeding and Hatchery Management	2019	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>

35. Geography

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEG-101	Geomorphology	2019	<ul style="list-style-type: none"> To understand the concept of place and how it is connected to people's sense of belonging to the physical environment, landscape and culture. To understand the fundamental concepts of spatial interaction and

				<p>diffusion, which explain how human activities are influenced by the concept of distance.</p> <ul style="list-style-type: none"> • Toexposedtothenatureofphysicalsystemssuchasgeomorphologicprocessesandnaturalhazards. • Toreadandinterpretinformationondifferenttypesofphysicalfeaturesmaps. • Tolearnhowhuman,physicalandenvironmentalcomponentsoftheworldinteract.
2	GEG-102	Economic Resource Studies	2019	<ul style="list-style-type: none"> • To acquire knowledge about the concepts of resources, classification, models of natural resource processes, their use and misuse, conservation and management of resources for sustainable development • To Provide a comprehensive introduction to basic concepts and key theoretical approaches in economic geography • To Introduce economic geography as a dynamic, diverse and contested body of knowledge • To enable you to apply this knowledge to key social and economic issues in the context of economic globalization
3	GEG-103P	Maps Scales and Map Projections	2019	<ul style="list-style-type: none"> • Toapprisesthestudentsabouttheartandscienceofmapmakingandrepresentation. • Toexplainstheusageofdifferenttypesofprojections • Tofocusontheimportanceofscaleandprojectionintheprocessofrepresentingtheearth'ssurface
4	GEG-104P	Terrain Mapping Techniques	2019	<ul style="list-style-type: none"> • ToapprisesthestudentsabouttheTerrainmappingtechniques • Toprojecttherepresentationofthelandformsbyusingcontourlines • Toexplainsthemethodsofslopeanalysis • Todeveloptheknowledgeonthethematicmaps • ToUnderstandthedatarepresentationthroughthediagrammaticformandloggraphs

5	GEG-105	Advanced Cartography	2019	<ul style="list-style-type: none"> To apprise the students to various aspects of cartography. To introduce the basic concepts and key theoretical approaches in Advanced Cartography. <p>To describe the art and science of mapmaking and map analysis</p>
6.	GEG-106	Human Values and Professional Ethics-I	2019	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society</p>
7.	GEG-201	Climatology and Oceanography	2019	<ul style="list-style-type: none"> To introduce to the students the fundamentals of atmospheric phenomena, global climate systems and climate change. The atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change. To grasp the techniques for modeling the climate, covering both theoretical and technical aspects. To understand the dynamics of the atmosphere and the overall climatological system. To be able to analyse and interpret climatic data and classification of climate
8.	GEG-202	Principles of Remote Sensing	2019	<ul style="list-style-type: none"> To focus on history and evolution of Remote sensing. To explain the principle involved in remote sensing i.e. the Electromagnetic spectrum, reflection, refraction, diffusion, absorption and interaction with the earth's atmosphere. To give the technical knowledge of satellite system. To provide knowledge on the platforms and instruments used for remote sensing. To give light on Aerial Remote sensing and satellite Remote sensing. <p>To explain about the specifications of sensors</p>

9.	GEG-203P	Interpretation of topographical and Weather Maps	2019	<ul style="list-style-type: none"> • To provide understanding and interpretation Skills of different Topographical maps. • To improve the knowledge on Indian weather maps and Interpretations skills.
10	GEG-204P	Techniques of Mapping and Map Analysis	2019	<ul style="list-style-type: none"> • To apprise the students about the Terrain mapping techniques • To project the representation of the land forms by using contour lines • To explain the methods of slope analysis • To develop the knowledge on the thematic maps
11	GEG-205	Geographical Thought	2019	<ul style="list-style-type: none"> • To acquaint the students with the Geographical philosophy and the Methodology and historical development of geography as a professional field. • The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production. • To developing critical thinking and analytical approaches and Students will acquire an understanding of and appreciation for the contributions of the eminent geographers to the subject.
12	GEG-206	Human Values and Professional Ethics-II	2019	<p>Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	GEG-301	Urban Studies	2019	<ul style="list-style-type: none"> • To deal with the concept of urban settlements and evolution of urban population and to provide concept of Urban studies.

				<ul style="list-style-type: none"> • To explain the cause and effect of growth in urban population. • To explain the theories involved in classification of towns and relationship between towns and cities and their population. • To understand patterns of World urbanization with reference to India
14	GEG-302	Geographical Information System(G.I.S)	2019	<ul style="list-style-type: none"> • To understand the evolution of GIS. • To focus on collection, analyzing, interpretation and presenting the data related to Earth. • To explain the types of data collection with respect to time and terrain and Database management and retrieving the data from different sources. • To provide the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS. • To provide knowledge on GIS applications in different sectors.
15	GEG-303P	Geographical Information System(G.I.S)	2019	<ul style="list-style-type: none"> • To acquaint knowledge about especially Geographic Information System(GIS) softwares. • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage. • To develop the skill on analysis methods of GIS.
16	GEG-304P	Statistical Techniques	2019	To analyze and represent the geographical data
17	GEG-305A	Agricultural Studies	2019	<ul style="list-style-type: none"> • To focus on evolution of Agriculture through at the different ages and approaches. • To understand the concepts and importance of determinants in different cropping patterns. <p>To understand agricultural allocation theories also the problem and prospect of Indian Agriculture</p>
18	GEG-305B	Regional Geography of	2019	<ul style="list-style-type: none"> • To develop the understanding about physical features of Indian Geography.

		India with special reference to Andhra Pradesh		<ul style="list-style-type: none"> To familiarize the students with physiography, Drainage, Climate, soil and natural vegetation of India.
19	GEG-305C	Disaster Management Studies	2019	<ul style="list-style-type: none"> To develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness. To create awareness on human and natural disasters To understand classification of disasters and its impacts
20	GEG-306A	Regional Geography of Andhra Pradesh	2019	<ul style="list-style-type: none"> To acquaint the students with re-organization of Andhra Pradesh and its new physical, climate and drainage aspects.. To obtain the knowledge of demographic, irrigation and major crops. To understand Andhra Pradesh mineral and industrial aspects with transportation. To improve knowledge on the transportation and communication aspects of Andhra Pradesh
21	GEG-306B	Geographical information System(GIS) and Global Positioning System(GPS) applications	2019	<ul style="list-style-type: none"> To develop the skill of understanding GPS and Survey. To create awareness on post processing of GPS data and collection of data from GPS survey. To develop skill of report writing by using GPS data and software and hardware To acquaint knowledge about especially Geographical Information System(GIS) softwares. To develop the skill of geo-referencing and creation of different data files. To improve the practical knowledge on attributed data and linkage. To develop the skill on analysis methods of GIS.

22	GEG-401	Regional Planning	2019	<ul style="list-style-type: none"> • To apprise the concept of Region and its planning. • To explain the types of regions and regional hierarchy. • To explain the types of regional planning and planning process. • To the people participation in planning process and role of Panchayat Raj system • To explain the resource based and physiographic based regional planning.
23	GEG-402	Advanced Remote Sensing	2019	<ul style="list-style-type: none"> • To give broad knowledge on photogrammetry, Principle, process, platforms and techniques and Aerial photographs. • To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques. • To understand the application of remote Sensing and Photogrammetry in various fields of study.
24	GEG-403P	Research Techniques	2019	<ul style="list-style-type: none"> • To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis. • To calculate and apply measures of location and measures of dispersion--grouped and ungrouped data cases. <p>To sensitize the different Research and agricultural techniques</p>
25	GEG-404P	Remote Sensing Applications	2019	<ul style="list-style-type: none"> • To explain practical knowledge on Remote sensing applications... • To help to understand Visual and digital interpretation of satellite Images. • To illustrate interpretation of Aerial photos. <p>To acquaint knowledge on allocation of RS in different fields and sectors</p>
26	GEG-405A	Water and Soil Resource Management	2019	<ul style="list-style-type: none"> • To apprise the student to various water resources related aspects and hydrological cycle • To focus on groundwater and soils specifications. <p>To develop skill of water and soil management and to study on some case studies</p>
27	GEG-405B	Environmental Studies	2019	<ul style="list-style-type: none"> • To create the environmental aptitude among students. • To familiarize the students with concepts, issues, approaches about physical

				land <ul style="list-style-type: none"> To acquainted with contemporary environmental problems and challenges. To provide knowledge on Ecosystem, Biomes, food chain and hydrological cycle
28	GEG-405C	Geography for Research Extension and industry	2019	<ul style="list-style-type: none"> To explain the historical evolution, of research in Geographical studies. To help to understand about ethics, methods and factors in geographical research. To provide the knowledge about forms of research and design. To illustrate research methods and data collection. To acquaint research analysis and report writing
29	GEG-406A	Regional Geography of India	2019	<ul style="list-style-type: none"> To conceptualize the regional approaches and to examine regional differentiation in the study of Indian Geography. To expose to historical, economic, cultural, social and physical characteristics of India. To provide an introduction to the regions of the India in terms of both their uniqueness and similarities
30	GEG-406B	Remote sensing Principles and Applications	2019	<ul style="list-style-type: none"> To explain practical knowledge on Remote sensing applications... To help to understand Visual and digital interpretation of satellite Images. To illustrate interpretation of Aerial photos.

36. Geology

37. Home Science

Food Science Nutrition & Dietetics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	FSND 101	Food Chemistry and Analysis	2019	I. Acquire knowledge on chemical composition physical, chemical, and functional properties of Water, carbohydrate, Protein and Fats.

				<ul style="list-style-type: none"> II. Understand the principles and working applications of different analytical techniques associated with food. III. Perform skills in qualitative and quantitative estimation of nutrients in different foods. IV. This course gives an hands on experience which will help student to become food analyst at local, regional, national and global levels.
2	FSND 102	Food Science and Experimental	2019	<ul style="list-style-type: none"> I. Acquire knowledge on Plant and Animal foods composition, and processing techniques on nutritive quality of foods. II. Understand the principles of cookery of different foods and methods of evaluation. III. This course is prerequisite for skill development in Food Product development. IV. Standardization and experimentation on different foods leading to physical, chemical and sensory changes can be understood leading to become food research analyst in industries at local, regional, national levels.
3	FSND 103	Clinical Nutrition and Dietetics-I Foods	2019	<ul style="list-style-type: none"> I. Understand the concepts of nutrition and its relation to health. II. Describe the role and responsibilities of Dietitian in Hospital. III. Apply Knowledge related to Therapeutic modification of diets and Plan and prepare diet for different diseases conditions. IV. This will help the students to get placements in hospitals and also start their own diet and nutrition clinics.
5	FSND 107	Essential of Food and Community Nutrition	2019	<ul style="list-style-type: none"> I. Understand about nutrients in food, their functions and consequences of deficiency. II. Apply skills for planning diets for nutritional disorders like PEM, Iron, Vitamin A and Iodine. III. Develop the knowledge of techniques to assess the nutritional status of different age groups. IV. Acquire knowledge on government programs to prevent nutritional disorders according to regional and national needs.
6	FSND 104	Food Chemistry and Analysis Practical	2019	<ul style="list-style-type: none"> I. Develop skills in quantitative and qualitative analysis of food.

7	FSND 105	Food Science and Experimental Foods Practical	2019	<ul style="list-style-type: none"> I. Apply skills in standardization of foods using different processing techniques. II. Acquire skills in processing, preparation and evaluation of bakery products.
8	FSND 106	Clinical Nutrition and Dietetics-I Practical	2019	<ul style="list-style-type: none"> I. Acquire hands on experience in Therapeutic modifications of diet for different diseases by planning, preparing and evaluating. II. Acquire community assessment skills in terms of anthropometry, dietary, clinical and biochemical for various disorders and planning programs for important days. III. Apply Computational skills in the Nutritional allowances during life span.
9	FSND 107	Human Values and Professional Ethics-I	2019	<ul style="list-style-type: none"> I. Define the term ‘ethics’ , ‘good and bad values’, crime and punishment and religious tolerance. II. Understand the importance of good character, conduct and values embedded in various religions. III. Apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room . IV. Demonstrate knowledge of ethical values in non-class room activities, internships and field work and resolve the moral issues. .
10	FSND 201	Nutritional Bio chemistry	2019	<ul style="list-style-type: none"> I. Understand the metabolism of nutrients such as carbohydrates, proteins, lipids, minerals and vitamins in human physiology. II. Acquire knowledge on factors affecting digestion, absorption of nutrients. III. Create awareness on enzymes and its role in nutrient metabolism. IV. Gain knowledge on role of vitamins and minerals as coenzymes in metabolism.
11	FSND 202	Food Microbiology and Safety	2019	<ul style="list-style-type: none"> I. Acquire knowledge about important genera of microorganisms associated with food. II. Acquaint with food contaminants and their sources. III. Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. IV. Gain knowledge on the characteristics of food borne diseases, infections and intoxications and their identification.
12	FSND	Clinical	2019	<ul style="list-style-type: none"> I. Understand the concepts of dietary principles for various diseases.

	203	Nutrition and Dietetics-II		<ul style="list-style-type: none"> II. Comprehend knowledge in Dietary modifications for the management of diseases. III. Application of principals in preparation and service of diets to the patients. IV. Able to assess the case studies and construct the diet charts.
13	FSND 204	Nutritional Biochemistry Practical	2019	<ul style="list-style-type: none"> I. Develop skill and hands on experience in analysis of biochemical parameters in blood and serum.
14	FSND 205	Food Microbiology and Safety Practical	2019	<ul style="list-style-type: none"> I. Demonstrate and develop skills in the use of standard methods and procedures for the microbiological analysis of food
15	FSND 206	Clinical Nutrition and Dietetics-II Practical	2019	<ul style="list-style-type: none"> I. Application of principals in preparation and service of diets to the patients. II. Able to assess the case studies and construct the diet charts.
16	FSND 207	Research Methodology	2019	<ul style="list-style-type: none"> I. Understand the concept of doing research about terms like ‘variables’, ‘hypotheses, and ‘research II. Gain knowledge on different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. III. Critically gain knowledge to select a sample by using different sampling methods like probability and non-probability sampling. IV. Develop a research proposal in the appropriate scientific style. V. Critically apply knowledge of application of statistics in data analysis. VI. Apply skills in using computer applications for data analysis
17	FSND 208	Human Values and Professional Ethics-II	2019	
18	FSND 301	Food Processing and Preservation Technology	2019	<ul style="list-style-type: none"> I. Understand the principles and scope of food processing and preservation. II. Get an overview on various techniques/methods in food processing and preservation. III. Acquire knowledge of emerging technologies and their applications in

				<p>food processing and preservation.</p> <p>IV. Acquaint knowledge on advanced food preservation technologies.</p>
19	FSND 302	Advances in Human Nutrition	2019	<p>I. Appraise the advance concepts of nutrition of Brain, Immunity and Sports.</p> <p>II. Understand the concepts of dietary management in endemic nutrition problems.</p> <p>III. Create knowledge on the dietary management during emergencies.</p> <p>IV. Understand the process and relation of immunity and nutrition</p>
20	FSND 303	Rural work experience	2019	<p>This programme develops competency in the areas of technological, managerial and communication skills among the students. To develop communications skills in students using extension training methods through planning, preparing of Teaching Learning materials and providing education in the areas of Nutrition, Child development and transfer of technology.</p>
21	FSND 304	Internship	2019	<p>INTERNSHIP as dietitian in hospitals give practitioner skills for entry-level dietitians who are able to assume leadership roles to improve and maintain the nutritional care of diverse individuals, families and communities within national and global populations.</p>
22	FSND 305-A	Nutrition Research techniques	2019	<p>I. Understand the methods of nutritional status assessment.</p> <p>II. Knowledge on assessment techniques of protein quality in diets</p> <p>III. Comprehensive knowledge on research techniques using animal models.</p> <p>IV. Gain knowledge in nutrition research techniques using Human models.</p>
23	FSND 305-B	Geriatric Nutrition	2019	<p>I. Understand the physiological changes and theories of ageing.</p> <p>II. Knowledge on importance and consequences of diet in elderly.</p> <p>III. Awareness on degenerative diseases, life style genesis and its management through diet.</p> <p>IV. Describe the government programs and policies for elderly.</p>
24	FSND 305-C	Nutrition in Emergencies And Disaster	2019	<p>I. Understand and assess the emergency situations related to food and Nutrition in natural and manmade disasters.</p> <p>II. Acquire knowledge on nutrition surveillance and treatment in emergencies.</p>

		Management		<ul style="list-style-type: none"> III. Gain Knowledge on planning nutrition relief and rehabilitation in emergencies. IV. Develop skills in Nutritional epidemiological studies.
25	FSND30 6-A	Fundamentals of Food, Nutrition and Health	2019	<ul style="list-style-type: none"> I. Gain knowledge on foods, food groups, balanced diet for different age groups. II. Understand the importance of macro and micronutrients in daily diet. III. Comprehend knowledge on deficiency symptoms of different nutrients. IV. Develop skills and hands on experience to assess nutritional problems in community.
26	FSND30 6-B	Nutritional Assessment	2019	<ul style="list-style-type: none"> I. Learn the determinants of Nutritional Surveillance. II. Understand the direct and indirect methods of nutritional assessment. III. Knowledge on dietary assessment at individual and house hold level. IV. Identify the clinical symptoms and biochemical tests for different nutritional problems.
27	FSND 401	Food Safety Standards and Quality Control	2019	<ul style="list-style-type: none"> I. Understand the current food safety standards rules and regulations. II. Gain knowledge on desirable and undesirable constituents and contaminants in foods. III. Critical analysis on subjective and objective methods of quality of food. IV. Develop skills for quality analysis and assurance of food.
28	FSND 402	Food Product Development and Marketing	2019	<ul style="list-style-type: none"> I. Illustrate the new product categories in food market and their characteristics. II. Elucidate the process of new food product development in food industry. III. Exemplify various specialty food products and their applications. IV. Acquire the skill to design and development of new food product and analyze the quality of the product.
29	FSND 403	Nutrition for Health and Fitness	2019	<ul style="list-style-type: none"> I. Define the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. II. Understand the Energy metabolism pathways during physical activity. III. Describe the role of macronutrients in physical performance, weight management and obesity. IV. Explains the nutritional needs in different sports and the role of national agencies.
30	FSND	Food Safety	2019	<ul style="list-style-type: none"> I. Develop skills for quality analysis and assurance of food.

	404	Standards and Product Development Practical's		II. Acquire the skill to design and development of new food product and analyze the quality of the product.
31	FSND 405 A	Institutional Food Service Management	2019	<p>I. Understand the different types and management of food services.</p> <p>II. Illustrate the infra structure plans, menus and equipment in food service establishments.</p> <p>III. Know the food safety measures in food service establishments.</p> <p>IV. Knowledge on finance and personnel management.</p>
32	FSND 405 C	Technology of Packaging(T+P)	2019	<p>I. Provide knowledge on packaging and packaging materials</p> <p>II. An overview of the scientific and technical aspects of food packaging.</p> <p>III. Enable the students to understand the regulations of packaging and packaging material testing.</p> <p>IV. Apply skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life.</p>
33	FSND 406-A	Child Growth and Development	2019	<p>I. Know the terms growth, development and stages of development across life span</p> <p>II. Understand the characteristics of children at different stages of childhood</p> <p>III. Explain the different developments like physical, cognitive , language and social development during childhood.</p> <p>IV. Apply knowledge to understand normal development and developmental delays during childhood.</p>
34	FSND 406-B	Disaster Management	2019	<p>I. Know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management.</p> <p>II. To understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters</p> <p>III. Explain the efforts made by the NGOs, Community based organizations and local administration in disaster management.</p> <p>IV. Discriminate disaster responses of Armed forces and Police.</p>

Human Development and Child Welfare

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HDCW-101	Advanced Study of Child Development	2017	Students acquire the knowledge of holistic development of individuals from conception to adolescent period. The students can disseminate the knowledge to teachers and parents regarding normal and delayed development among children. The students can apply skills when they serve as teachers at local level or as extension officers in national schemes like ICDS.
2.	HDCW-102	Community Nutrition	2017	Students acquire knowledge about food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural forming , ICDS etc.
3.	HDCW-103	Trends in Early Childhood Education	2017	Students apply knowledge about appropriate approaches to teach pre- school children. They apply skills in the field of early childhood education, when they are placed as pre -school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
4.	HDCW-104	Practical-I Developmental Assessment Practical	2017	Students acquire skills on apply skills of observation of recording of all round development among infant and children below 5 years. They learnt how to assess cognitive, physical, social &emotional development of children from late childhood to adolescent period, and life skills among adolescents.. The students can apply skills when they as teachers at local level or as extension officers in national schemes like ICDS.
5.	HDCW-105	Practical-II Community Nutrition Practical	2017	Students apply skills related to food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural forming , ICDS etc.
6.	HDCW-106	Practical-III Early Childhood Education Practical	2017	Students apply skills in the field of early childhood education, when they are placed as pre-school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
7.	HDCW-107	Family Dynamics	2017	Students get knowledge related to issues in family and society and understand laws related to marriage and family . Students utilize this knowledge when they work in national organizations like social welfare board ,and family counseling centers and

				in non-government organizations catering to the family welfare at local level like PASS ,RASS etc..
8.	HDCW-108	Human Values and Professional Ethics-I	2017	Students understand the importance of good character , conduct and values embedded in various religions . Demonstrate knowledge of ethical values in non-class room activities, internships and field work.
9.	HDCW-201	Quality Standards in ECE Centers	2017	Students get knowledge about planning activities for pre-school children .They understand different ways of teaching stories ,rhymes etc using different audio-visual aids.apply skills in planning a day's activities for pre -school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing pre- school education
10.	HDCW -202	Child Study Techniques	2017	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
11.	HDCW -203	Children with Developmental Challenges	2017	Students gain knowledge about the causes for various impairments and principles of assessment of children with disabilities and gifted children. The practical skills of management of special children were to be treated when they are placed as special educators in local schools ,colleges and at national Government organizations like NIMH,NIHH at national level and non government organizations at local level like Nava Jeevan center for Visually Challenged , RASS,PASS etc.
12.	HDCW-204	Practical-I Participation in ECE Center Practical	2017	Students will be able to apply skills in planning a day's activities for pre -school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing pre- school education

13.	HDCW-205	Practical-II Child Study Techniques Practical	2017	Students apply skills for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital
14.	HDCW-206	Practical-III Children with Developmental Challenges Practical	2017	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
15.	HDCW-207	Research Methodology	2017	Student gain knowledge about types of research ,different methods of sampling and preparation of schedules/questionnaires. The students get skills in preparation of a research proposal. The knowledge helps the students to write articles for journals at national and international levels.
16.	HDCW -208	Human Values of Professional Ethics - II	2017	Understand the importance of value education and ethics in medical , business ,environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.
17.	HDCW -301	Parent Education	2017	The students gain knowledge about different child rearing practices and parenting styles adopted by parents. Gain skills in planning education materials for parents ,conduct parent education programs in schools and community, when they work as a teachers at local schools. It helps to disseminate the knowledge related to impact of parenting styles on child behavior to parents , teachers and significant others in the community.
18.	HDCW-302	Theories and Approaches to Child Guidance	2017	The students describe different theories related to child development and understand the reasons for maladaptive behavior. Apply the knowledge of theories to understand the behavior of individuals and also in counselling , when they join as counselors at local schools and mental health institutions at regional level like VIMHANS ,Vijayawada , at national level like NIMH ,Hyderabad and at local level Child Guidance clinics run by Government hospitals like SVRR hospital.
20.	HDCW-303	Practical -I Rural Work Experience	2017	Students develop an understanding of rural life situations and problems related to nutrition and child development relevant to real field situations through practical training. They gain knowledge and skills to impart education related to health and

				nutrition to the rural audience. This experience will helpful when they join rural development programs run by government like Health and Nutrition Natural Farming Fellow in Natural Farming Project.
21.	HDCW-304	Practical-II Internship	2017	Students get hands-on experience in real life work settings relevant to the human development like SODHANA, Vijayanagaram, Christian Counselling Centre ,Vellore ,Sudheesha Counselling Centre, Hyderabad, VIMHANS, Vijayawada.
22.	HDCW-305	Generic Elective* a) Infant Development and Stimulation b) Development of Learning Material and Children's Literature c) Planning For Project Management	2017 2018	(a)Students gain knowledge of stimulation activities for physical ,language ,cognitive and social development of infants. The knowledge and skills will help to plan stimulation activities for infants ,when they establish crèche as entrepreneurs or serve in Day care centers. (b) Students understand the importance and principles of teaching materials for young children. They gain skills in planning and development of material for al round development of children. The students can prepare teaching, learning materials when they join as teachers in pre - schools at local levels and as resource persons at national organizations like "Ajimpremi" Foundation. (c) Students gain knowledge in identification of problem for a research project, apply skills in selection of tools ,data collection and report writing .The knowledge helps the students to write articles for national and international levels and also to take up small projects.
24.	HDCW -401	Guidance and Counselling in Human Development	2017	The students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS , PASS ,VIMHANS ,Vijayawada etc.
25.	HDCW -402	Advanced Human Development	2017	Students understand the characteristics and problems of early, middle and late adulthood persons. This knowledge helps when they get employment in Day care (or) foster care centers for elderly citizens (or) employment in Govt and ,local old age homes run by non govt organizations like RASS and PASS etc.
26.	HDCW -403	Rehabilitation and Management of	2017	Students understand the importance of Rehabilitation of children with developmental challenges through multi disciplinary approach. Gets practical

		Children with Special Needs		knowledge about functioning of Govt and voluntary organizations that are managing children with developmental challenges .This helps students when they join as special educators at govt organizations like NIMH, Hyderabad and non govt organizations like RASS,PASS.
27.	HDCW-404	Practical Guidance and Counseling Practical	2017	The students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS , PASS ,VIMHANS ,Vijayawada etc.
28.	HDCW-405	Generic Elective* (a) Child and Human Rights or (b) Organization and Management of Child Welfare of Institutions (c) Behavior problems and disorders among children	2017 2018	(a) Students gain knowledge about human rights ,child rights and women rights. They can explain issues faced by women and children in difficult circumstances . The knowledge helps to understand the rights and problems of women and children when they work in Government organizations like Child Protection Officers. (b).Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc. (c)The students recognize the systems of common behavior problem and disorders among children. They apply skill in management of problems and disorders through behavior modification techniques .These skills help the students when they work at local NGO like RASS, PASS and regional level like VIMHANS Vijayawada
29.	HDCW-406	Open Elective* (For other departments) a) Child Welfare Programs or	2017	a). Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc. b).Students gain in-depth knowledge about natural disasters; manmade disasters;

		(b)Disaster management		chemical hazards : disaster management. This helps to understand efforts made by the NGOs, Community based organizations and local administration in disaster management and also to help Government in times of disasters
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Extension Management and Communication Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	EMCT-101	Extension Education in Community Development	2019	The students can gain understanding on the Extension Management community development and panchayat raj system to study the community by using PRA and various approaches of extension education. The students will get jobs as extension officers, and various placements in community development projects, as well as rural co-operative sector.
2	EMCT-102	Community Nutrition	2019	The students know about nutrients in food and know about the nutritional deficiencies and the community level problems and policies and programmes of Nutrition.
3	EMCT-103	Communication and Media Preparation	2019	The concept of Communication –Recent trends in Instructional technology: Extension literature and the role of different factors influencing and effecting communication process- Dyad setting small group and mass communication. This course will help the students to improve their communication skills.
4	EMCT-104	Extension Education in Community Development Practical	2019	The students will acquire skill to study the community by using PRA techniques and develop the skill of critical analysis on various approaches of extension education.

5	EMCT-105	Community Nutrition Practical	2019	Students gain practical knowledge on the role of nutrients in different stages of human life and methods of nutritional assessment and community level problems and policies.
6.	EMCT-106	Communication and Media Preparation Practical	2019	Students analyze the role of different factors influencing and effecting communication process, preparation and use of different teaching aids in teaching different groups of people and in different learning situations
7.	EMCT-107	Dynamics of Rural Society	2019	The students will gain knowledge on social structure; characteristics of rural people; rural social problems - social institutions, learn the factors affecting social change and gain insight about the welfare policies and programmes for rural society.
8.	EMCT-108	Human Values and Professional Ethics-1	2019	Students will apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.
9.	EMCT-201	Entrepreneurial Development and Empowerment of Women	2019	Students acquire knowledge on Entrepreneurship, about the strategies for empowering women; rights of women and develop the entrepreneurship skills and learn about the institutional support of entrepreneurship. This course will help the students to become good entrepreneurs and also to start their own business enterprise.
10.	EMCT-202	Educational Technology	2019	The students gain knowledge on concept of teaching learning process; forms and levels of teaching and learning; curriculum design, development knowledge on genesis and trends in modern education. This will help the students to develop the curriculum and to choose their career in the teaching field.
11	EMCT-203	Community	2019	Students will know about community organization, process of Community organization,

		organization and Leadership		rural institutions, leadership, analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth clubs; Role of Panchayat in developing rural women.
12	EMCT-204	Entrepreneurial Development and Empowerment of Women Practical	2019	Students will realize the role of entrepreneurship in economic development. Develop the skill of writing the business proposal and starting of business enterprise.
13	EMCT-205	Educational Technology Practical	2019	Students will develop the skill on developing a course curriculum; Preparation of lesson plans of selected topics and use of different instructional materials.
14	EMCT-206	Community Organization and Leadership Practical	2019	Students will develop the skill on different patterns of leadership, techniques of identification of leaders, and appraise the ongoing programmes in the locality.
15	EMCT-207	Research Methodology	2019	Students get knowledge on 'variables', 'hypothesis', research and recognize the purpose of doing a research, sampling methods and develop a research proposal in the appropriate scientific style.
16	EMCT-208	Human values and Professional Ethics-II	2019	Students gain knowledge on 'value education' 'self-introspection' and 'self-esteem develop well balanced personality, socially responsible persons of the society.
17	EMCT-301	Rural Development	2019	Students gain insight about administration in Extension and rural development: coordination and supervision in rural development administration, the purpose and

		Administration		principles of administration; human relation in extension administration the recent ongoing rural development programmes etc. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
18	EMCT-302	Training and Development	2019	Students will learn the concept of training, goals of training; learning and types of learning, factors affecting learning among adult, current trends in training methodologies; training strategies and designs and acquire skills in developing; selection and use of different training methods- case study; role play; and brain storming; etc. This course will help the students to get jobs as Trainee- motivators, Trainers, consultants etc.
19	EMCT-303	Rural Work Experience	2019	Students will develop an understanding of rural life situations prevailing in villages with special reference to Home science among the student will know about socioeconomic conditions of people and their problems and several agencies and institutions involved in rural development.
20	EMCT-304	Internship	2019	Students will gain first-hand exposure of working with NGOs. This will provide a practice-oriented and 'Hands-on' working experience in the NGOs / Government organizations and to enhance the students learning experience.
21	EMCT-305	(a) Managerial Skills for Extension Professionals (b) Communication Technologies in Extension (c) Sustainable	2019	a) Students will know about the conceptualization of management process and its major functions, managerial skill; nature and importance for extension professionals. To understand the concept; scope and relevance of media in society; functions and future prospects of media systems b) To understand the concept; scope and Communication technologies, relevance of media in society; functions and future prospects of media systems etc c) Students will know about the livelihoods of rural/urban people; resources – land, soil; climate; water and forests; processes and relationships among agro-climatic and natural

		Livelihood Systems		resources, understand the production systems- farming and non-farming activities; their linkage with the livelihoods of rural people, food security; livelihood security, indicators of environmental sustainability.
22	EMCT-306	(a) Fundamentals of Food. Nutrition and Health (or) (b) Nutritional Assessment	2019	Students gain knowledge on foods, food groups, balanced diet for different age groups, understand the importance of macro and micronutrients in daily diet. Students will learn the determinants of nutritional surveillance; understand the direct and indirect methods of nutritional assessment. Gain knowledge on dietary assessment at individual and house hold level. Identify the clinical symptoms and biochemical tests for different nutritional problems
23	EMCT-401	Principles of Guidance and Counseling	2019	Develop knowledge about the concept; purpose; functions and role of guidance; types of services in a guidance programme , counseling and counseling theories, group guidance and counseling; concept; characteristics; Individual v/s group techniques. This course will help the students to get jobs as counselors and in Government and Non-government organizations, as counselors, consultant research co-coordinators etc
24	EMCT-402	Extension Programme Planning and Evaluation	2019	Students will get knowledge about Programme planning in Extension; Programme Implementation; Programme Evaluation, Documentation, Programme Planning; the Preparation of plan of work ; Purpose, types and tools of Evaluation; Programme planning and implementation, documentation in Programme implementation. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
25	EMCT-403	Thesis/	2019	Students gain knowledge about the concept of community health and global health;

		Community Health Management		Primary Health Care – definitions; principles; components; comprehensive health care; levels of prevention, major health problems in India, management information systems in health, health needs of special groups – women, infants; and children; health of adolescents; geriatric health needs and problems.
26	EMCT-404	Principles of Guidance and Programme Planning Practical	2019	Assess the guidance programmes and counseling process in school and out of school settings and analyze use of standard test of study habits and attitudes (SSHA) for analyzing the study habits and attitudes.
27	EMCT-405	(a) Extension Management (b) Science & Technology for Rural Women (c) Environmental Management	2019	a) Students will know about administration and management; process of management and organizational climate, understand the qualities and functions of extension personnel; Problems and issues of extension management in India. Analyze the management skills of extension personnel. b) Students will learn about the Science and Technology for rural development; Energy saving devices-application of solar energy; bio-gas etc., application of Science and Technology in Home science, safe water supply methods suitable for rural areas; health-hygiene and environmental sanitation, agencies involved in research and application of Science and Technology. c) Students will get the knowledge about the life and the environment; physical - chemical factors in the environment; changes in the environment; eco-system-earth, methods of waste management; women and environment government and non-governmental agencies in promoting better health, factors affecting changes in ecosystem and environment
28	EMCT-406	(a) Child	2019	a) Students will learn concepts of ‘child’ and ‘child welfare’, enlist children in need of

		Welfare Programmes or (b) Disaster Management		<p>care and difficult circumstances, understand the role of government, child welfare programmes developmental and rehabilitative manner to the disadvantaged people in the society, monitoring and evaluation</p> <p>b) Students will get an insight about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management., global warming etc)efforts made by the NGOs, & Community based organizations and local administration in disaster management.</p>
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Food Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	FT-101	Food Chemistry and Analysis	2019	- Students will acquire knowledge about physical, chemical, and functional properties of foods.

				<ul style="list-style-type: none"> - Learn the fundamental principles and working applications of different analytical techniques associated with food. - Students will be able to explore and perform skills in qualitative and quantitative estimation of nutrients in different foods.
2	FT-102	Food Science and Experimental Foods	2019	<ul style="list-style-type: none"> - Students will acquire knowledge on structure, composition and functional properties of plant and Animal foods. - Understand the principles of cookery of different foods and methods of evaluation. - Students will be able to apply the scientific method and quantitative techniques in standardisation of foods using different processing techniques.
3	FT-103	Cereal Grains, Legumes and Oilseed Technology	2019	<ul style="list-style-type: none"> - Students will gain knowledge on the structure and composition of cereal grains, pulses and oil seeds. - Understanding of the basic concepts of Post harvest technology, mechanism of equipments and processing of cereals, pulses and oilseeds - Know about various processing, milling process and evaluate Traditional and commercially processed foods with cereals, pulses and oilseeds
4	FT-104	Food Chemistry and Analysis	2019	<ul style="list-style-type: none"> - The students will know about principles and working applications of different analytical techniques associated with food. - Perform skills in qualitative and

				quantitative estimation of nutrients in different foods.
5	FT-105	Food Science and Experimental Foods	2019	<ul style="list-style-type: none"> - Comprehensive knowledge on techniques of analysing, evaluating and application of foods in different processing techniques in foods.
6.	FT-106	Cereal Grains, Legumes and Oilseed Technology	2019	<ul style="list-style-type: none"> - The students will be able to explore knowledge on various processing techniques of cereals, legumes and oilseeds. - Students acquire knowledge in various food applications and product preparations.
7.	FT-107	Essentials of Food and Community Nutrition	2019	<ul style="list-style-type: none"> - Students gain knowledge about nutrients in food and their functions. - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups
8.	FT-108	Human Values and Professional Ethics - I	2019	<ul style="list-style-type: none"> - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. - Introducing different concepts of Bhagavad Gita and its applications in uplifting of values in the present society.

9.	FT-201	Technology of Horticulture produce	2019	<ul style="list-style-type: none"> - Attain an overview on the classification composition and post-harvest handling technologies of fruits and vegetables to reduce postharvest losses and their value addition. - Impart the knowledge of processing, preservation and manufacture of fruits and vegetable based food products of fruits and vegetables. - Expertise in development of various Fruits & vegetables based products and assess the quality of fruit and vegetables and their products.
10.	FT-202	Food Microbiology and Safety	2019	<ul style="list-style-type: none"> - Obtain knowledge about important genera of microorganisms associated with food and food spoilages. - Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. - Demonstrate the use of standard methods and procedures for the microbiological analysis of food
11	FT-203	Dairy Technology	2019	<ul style="list-style-type: none"> - Impart the knowledge of milk grading , composition and technologies of processing of milk and milk products. - Provide in-depth knowledge in various unit operations and developments in dairy processing. - Demonstrate the manufacturing of various dairy products and exemplify the quality of dairy products.
12	FT-204	Technology of Horticulture produce	2019	<ul style="list-style-type: none"> - Student will know about various fruit and

				vegetable processing techniques and attain practical knowledge in production and preparation of products
13	FT-205	Food Microbiology and Safety	2019	<ul style="list-style-type: none"> - Acquire knowledge on laboratory techniques to identify microorganisms in food. - Demonstrate the various microbial estimations in foods by applying standard techniques.
14	FT-206	Dairy Technology	2019	<ul style="list-style-type: none"> - Students acquire knowledge of grading, composition, quality evaluation and processing techniques of milk and milk products.
15	FT-207	Research Methodology	2019	<ul style="list-style-type: none"> - Awareness about terms like ‘variables’, ‘hypothesis’, research ‘and recognize the purpose of doing research. - Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. - Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling and development of research proposal.
16	FT-208	Human Values and Professional Ethics – II	2019	<ul style="list-style-type: none"> - Student will know the values of ethics in various fields including medical, social and business ethics. - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Introduction of several Natural values to

				be performed by Humans to lead a good and Peaceful life.
17	FT-301	Food processing and Preservation Technology	2019	<ul style="list-style-type: none"> - Students able to understand the scope, principles and different methods of processing and preservation techniques. - Acquire knowledge of emerging technologies and their applications in food processing and preservation. - Understand the applications and limitations of food processing and preservation technology.
18	FT-302	Live Stock and Sea Food technology	2019	<ul style="list-style-type: none"> - Acquire knowledge of the structure, composition, nutritional quality of various, livestock and seafood. - Gain insight knowledge of slaughtering, carcass processing, processing methods used for processing meat poultry and fish. - Prepare various value-added products of egg, meat, poultry and sea foods.
19	FT-303	Food Processing and Preservation Technology	2019	<ul style="list-style-type: none"> - Student acquires knowledge of emerging technologies and their applications in various processing techniques and products of various foods by processing and preservation methods.
20	FT-304	In plant training.	2019	<ul style="list-style-type: none"> - Provide hands on experience with regard to different areas in food industries. - Acquaint and gain knowledge related to production, unit operations, quality control and marketing aspects of food industry. - Emphasize the prominence of food plant sanitation, food safety, standards, laws and regulation in food industry.

21	FT-305(a)	(a)Unit operations in Food Industry. .	2019	<ul style="list-style-type: none"> - Important preliminary operations in food processing industries and understand the principle of Unit operation in food industry. - Impart knowledge on Safety, sanitation and Effluent Treatment in food industry. - Know the different pre and post processing operations as storage and packaging foods etc.
22	FT-305(a)	(b) Spices, Condiments and Plantation Crops	2019	<ul style="list-style-type: none"> - Students acquire knowledge, identification and post-harvest technologies of various spices, condiments and plantation crops. - Illustrate various value added products of spices, condiments and plantation crops. - Perceive Standards, specifications, packaging and Quality control measures of spices, condiments and plantation crops.
23	FT-305(a)	(c) Nutrition in Emergencies and Disaster	2019	<ul style="list-style-type: none"> - Explain concepts on Epidemiology and its application in planning programs during emergencies and emergency situations in natural and manmade disasters. - Gain knowledge on nutrition surveillance and treatment in emergencies. - Knowledge on planning nutrition relief and rehabilitation in emergencies.
24	FT-306(a)	(a)Fundamentals of Food, Nutrition and Health	2019	<ul style="list-style-type: none"> - Gain knowledge on foods, food groups, balanced diet and importance of macro and micronutrients for different age groups in daily diet. - Comprehend knowledge on deficiency symptoms of different nutrients. - Apply skills to assess on nutritional

				problems in community.
25	FT-306(b)	b)Nutritional Assessment	2019	<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups.
26	FT-401	Food Safety Standards and Quality Control	2019	<ul style="list-style-type: none"> - Gain knowledge in current rules and regulations of food safety standards and quality assurance. - Understand the insight quality evaluation of different foods by standard methods. - Develop skills for quality analysis and assurance of food quality.
27	FT-402	Food Product Development and Marketing	2019	<ul style="list-style-type: none"> - Elucidate the process of new food product development process to generate ideas, develop concept to test market and in food industry. - Acquire the skill to design and development of new food product and analyse the quality of the product. - Student able to design, demonstrate the skills in food process, organoleptic evaluation and nutritional label of food products as a team work.
28	FT-403	Nutrition for Health and Fitness/Project Work	2019	<ul style="list-style-type: none"> - Understand the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. - Describe the role of nutrients in physical performance, weight management, obesity and Energy metabolism pathways during physical activity. - Gain knowledge on concepts of physical

				activity, physical fitness and the importance of nutrients in Sports.
29	FT-404P	Food Safety standards and Product Development	2019	<ul style="list-style-type: none"> - Gain knowledge on subjective and objective evaluation methods of foods with safety and standards. - Exemplify various speciality food products and their applications, acquire the skill to design and development of new food product and analyse the quality of the product.
30	FT-405 (a)	(a) Institutional food service management	2019	<ul style="list-style-type: none"> - Gain knowledge on principles of safe food preparation and cooking methods and service management.
31	FT-405 (b)	(b)Basic Food Engineering	2019	<ul style="list-style-type: none"> - Student understands the basic Principles, overview of processing techniques and methods of food. - Able to describe the types and properties of agro processing equipments like pasteurizer, spray drier and sealing equipments. - Enumerate processing equipments and maintenance of processing equipments
32	FT-405 (c)	(c)Food Packaging	2019	<ul style="list-style-type: none"> - Enable the students to understand the regulations of packaging and packaging material testing. - Knowledge of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life. - Able to utilize some of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life.

33	FT-406(a)	(a) Child Welfare Programmes	2019	<ul style="list-style-type: none"> - Understand the different developments like physical, cognitive, language and social development during childhood. - Apply knowledge to understand normal development and developmental delays during childhood.
34	FT-406(b)	(b)Disaster Management	2019	<ul style="list-style-type: none"> - Understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters;. - Illustrate the efforts made by the NGOs, Community based organizations and local administration in disaster management.

37. Mathematics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	MA 101	Algebra	2019	<ol style="list-style-type: none"> 1. Identify the concept of action and conjugation. 2. Analyze the maximal, prime, nilpotent and Nil ideals. 	
2.	MA 102	Real Analysis	2019	<ol style="list-style-type: none"> 1. Understand the concepts of Riemann Stieltjes integration and Differentiation. 2. Understand Uniform Convergence and continuity. 3. Learn comparison tests at a and infinity. 	
3.	MA 103	Ordinary Differential Equations	2019	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 1. Learn boundary value problems, Eigen values and Eigen functions 2. Solve the second order linear questions. 	

4.	MA 104	Complex Analysis	2019	<ol style="list-style-type: none"> 1. Decide when and where a given function is analytic . 2. Understand the Mobius Transformation. 3. Describe basic properties of complex integration and having the ability to compute such integrals. 4. Understand Power series and expansion of analytic 	
5.	MA 105	Computer Oriented Numerical Methods	2019	<ol style="list-style-type: none"> 1. Apply numerical methods to obtain approximate solutions to mathematical problems. 2. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 3. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	
6.	MA 106	Human Values and Professional Ethics-I	2019	<ol style="list-style-type: none"> 1. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study. 2. Understand human values . 3. Develop character, affection and love towards other human beings. 4. Know the value of Four Noble Truths of Buddhism 	

7.	MA 201	Galois Theory	2019	<ol style="list-style-type: none"> 1. Apply the knowledge on polynomials solvable by radicals, Extension field. 2. Understand the normal and separable extensions. 3. Study the roots of polynomials specially quintic polynomials which is the cause to develop Galois theory. <p>Solve the problems on cyclotomic polynomials</p>	
8.	MA 202	Partial Differential Equations	2019	<ol style="list-style-type: none"> 1. solve Pfaffian differenrial equations and find orthogonal trajectories of a curve. 1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve 2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method. 3. Apply various methods to solve Partial Differential Equations of the Second order. 4. Obtain equipotential surfaces using Laplace's 	
9.	MA 203	Topology	2019	<ol style="list-style-type: none"> 1. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis. 2. Understand Topological Spaces, definition & examples. 3. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics. 4. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem. 	

10.	MA 204	Advanced Complex Analysis	2019	<ol style="list-style-type: none"> 1. To learn Laurent Series-Singular Points. 2. Explain the basic properties of complex integration and compute such integrals. 3. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 4. Understand the Infinite product and Partial Fraction Expansions. 	
11.	MA 205	Measure and Integration	2019	<ol style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	
12.	MA 206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 1. Understand the fundamental responsibilities and respect towards women 2. Know the value of education. 3. Question the illegal practices in the medical and business fields. 4. Understand the value of ecological balance and act in such a way which saves it. 5. Analyze the impact of media. 	

13.	MA 301	Commutative Algebra	2019	<p>To understand the ideals, Modules and operations on them.</p> <p>2.To learn the structures of composition series with ACC and DCC</p> <p>2. To study the theoretical properties of Noetherian rings</p>	
14.	MA 302	Functional Analysis	2019	<ol style="list-style-type: none"> 1) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 2) Comprehend the Open mapping theorem and Closed graph theorem. 3) Construct orthonormal sets and conjugate spaces. 4) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. 	
15.	MA 303	Classical Mechanics	2019	<ol style="list-style-type: none"> 1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 2) Derive the Lagrange's Equation from Hamilton's Principle. 3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action. 	

16.	MA 304	A) Differential Geometry B) Cryptography C) Linear Algebra D) Discrete Mathematics	2019	<ol style="list-style-type: none"> 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. <ol style="list-style-type: none"> 1) Understand various Cryptographic Techniques. 2) Apply various public key cryptography techniques. 3) Understand the various Security Applications. 4) Implement system level security applications. 5) Be familiar with secure random bit generator and linear feedback shift register sequences. 6) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 7) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. <p>Solve the system of linear equations</p> <ol style="list-style-type: none"> 2. Understand the concept of vector space, basis, dimension and linear Transformation 3. Explain the direct sum decompositions 4. Understand the Bilinear forms. <ol style="list-style-type: none"> 1. Use standard Normal Forms-Disjunctive-Conjunctive Principal Disjunctive 2. Discuss Inference Theory of the Predicate Calculus 	
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17.	MA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2019	<ol style="list-style-type: none"> 1. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 2. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 3. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 4. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
18.	MA 401	Number Theory	2019	<p>.</p> <ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 2. Understand the concepts of Limit, continuity & differentiation of functions. 3. Apply Integrals to find areas, length & volume of regions. 4. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

19.	MA 402	Banach Algebra	2019	<ol style="list-style-type: none"> 1. Understand different types of Banach Algebras with examples. 2. Know the essence of Gelfand mapping 3. Understand the Application of Commutative C*- algebras. 4. Derive the applications of Banach Algebra in analysis, Fourier series, Boolean Algebras and other significant areas of mathematics. 	
20.	MA 403	Graph Theory	2019	<ol style="list-style-type: none"> 1. Able to define basic concepts of graphs 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and 	
21.	MA 404	A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research	2019	<ol style="list-style-type: none"> 1. To learn the fundamental concepts of statistics and techniques required for data analysis. 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence 	

22.	MA 405	A) Theoretical Computer science B) Biomechanics	2019	<ol style="list-style-type: none"> 1) Know the Basic concepts of Metric spaces And Normed Linear space. 2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces. 3) Knows Bernstein's lethargy theorem and its practical and theoretical implications. 4) Be able to use and analyze the basic methods for polynomial approximations. 	
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APPLIED MATHEMATICS:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
23.	AMA101	METHODS OF APPLIED MATHEMATICS	2019	<ol style="list-style-type: none"> 1. Expand a function in a Fourier series and able to know under what conditions such an expansion is valid. 2. Aware of the connection between integral transforms (Fourier and Laplace) and be able to use the latter to solve mathematical problems relevant to the physical sciences. 3. Understand the applications of Sylow theorems. 4. Describe Unique Factorization and Euclidean Domains. 	
24.	AMA 102	Real Analysis	2019	<ol style="list-style-type: none"> 5. Understand the concepts of Riemann Stieltjes integration and Differentiation. 6. Understand Uniform Convergence and continuity. 7. Learn comparison tests at a and infinity. 	

25.	AMA 103	Ordinary Differential Equations	2019	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 5. Learn boundary value problems, Eigen values and Eigen functions 6. Solve the second order linear questions. 	
26.	AMA 104	Complex Analysis	2019	<ol style="list-style-type: none"> 5. Decide when and where a given function is analytic . 6. Understand the Mobius Transformation. 7. Describe basic properties of complex integration and having the ability to compute such integrals. 8. Understand Power series and expansion of analytic 	
27.	AMA 105	Computer Oriented Numerical Methods	2019	<ol style="list-style-type: none"> 4. Apply numerical methods to obtain approximate solutions to mathematical problems. 5. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 6. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	

28.	AMA 106	Human Values and Professional Ethics-I	2019	<p>5. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study.</p> <p>6. Understand human values .</p> <p>7. Develop character, affection and love towards other human beings.</p> <p>8. Know the value of Four Noble Truths of Buddhism</p>	
29.	AMA 202	Partial Differential Equations	2019	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Apply various methods to solve Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's</p>	

30.	AMA 203	Topology	2019	<ul style="list-style-type: none"> 5. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis. 6. Understand Topological Spaces, definition & examples. 7. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics. 8. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem. 	
31.	AMA 204	Advanced Complex Analysis	2019	<ul style="list-style-type: none"> 5. To learn Laurent Series-Singular Points. 6. Explain the basic properties of complex integration and compute such integrals. 7. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 8. Understand the Infinite product and Partial Fraction Expansions. 	
32.	AMA 205	Measure and Integration	2019	<ul style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	

33.	AMA 206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 6. Understand the fundamental responsibilities and respect towards women 7. Know the value of education. 8. Question the illegal practices in the medical and business fields. 9. Understand the value of ecological balance and act in such a way which saves it. 10. Analyze the impact of media. 	
34.	AMA301	CONTINUUM MECHANICS	2019	<ol style="list-style-type: none"> 1) Be able to describe motion, deformation and forces in a continuum. 2) Be able to derive equations of motion and conservation laws for a continuum. 3) Understand constitutive models for fluids and viscoelastic solids. 4) Formulate and solve specific technical problems of displacement, strain and stress. 5) Perform experiments with stresses and deformations. 6) Numerically model and analyse the stresses and deformations of simple geometries under an arbitrary load in both solids and liquids. 	

35.	AMA 302	Functional Analysis	2019	<ul style="list-style-type: none"> 5) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 6) Comprehend the Open mapping theorem and Closed graph theorem. 7) Construct orthonormal sets and conjugate spaces. 8) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. 	
36.	AMA 303	Classical Mechanics	2019	<ul style="list-style-type: none"> 5) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 6) Derive the Lagrange's Equation from Hamilton's Principle. 7) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 8) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action. 	

37.	AMA 304	A) Differential Geometry B) Cryptography C) Semi group theory D) Discrete Mathematics	2019	1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. 8) Understand various Cryptographic Techniques. 9) Apply various public key cryptography techniques. 10) Understand the various Security Applications. 11) Implement system level security applications. 12) Be familiar with secure random bit generator and linear feedback shift register sequences. 13) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 14) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. Solve the system of linear equations 2 .Understand the concept of vector space, basis, dimension and linear Transformation 3. Explain the direct sum decompositions	
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38.	AMA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2019	<ul style="list-style-type: none"> 9. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 10. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 11. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 12. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 13. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 14. Understand the concepts of Limit, continuity & differentiation of functions. 15. Apply Integrals to find areas, length & volume of regions. 16. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
39.	AMA 401	Number Theory	2019	<ul style="list-style-type: none"> . 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

40.	AMA402	FLUID DYNAMICS	2019	<ol style="list-style-type: none"> 1) Be familiar with continuum model of fluid flow and classify fluid/flows based on physical properties of a fluid/flow along with Eulerian and Lagrangian descriptions of fluid motion. 2) Derive and solve equation of continuity, equations of motion, vorticity equation, equation of moving boundary surface, pressure equation and equation of impulsive action for a moving inviscid fluid. 3) Understand Boundary layer Equations. 4) Solve Analytic Boundary layer equations . 	
41.	AMA 403	Graph Theory	2019	<p>Able to define basic concepts of graphs</p> <ol style="list-style-type: none"> 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and 	
42.	AMA 404	<ol style="list-style-type: none"> A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research 	2019	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <ol style="list-style-type: none"> 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence 	

43.	AMA 405	A) Theoretical Computer science B) Biomechanics	2019	<p>5) Know the Basic concepts of Metric spaces And Normed Linear space.</p> <p>6) Knows existence and uniqueness theorems for the best approximations in various Banach spaces.</p> <p>7) Knows Bernstein's lethargy theorem and its practical and theoretical implications.</p> <p>8) Be able to use and analyze the basic methods for polynomial approximations.</p>
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38. Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
MB-102	Enzymology & Microbial Physiology & Metabolism	2019	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
MB-105	Introductory Microbiology	2019	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
MB-106	Human Values and Professional Ethics – I	2019	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
MB-202	Medical Microbiology	2019	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
MB-204P	Practical – II Medical Microbiology	2019	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures.

			Be able to identify blood cell types.
MB-205	Basics of Virology	2019	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plant viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different virus shapes (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Calciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
MB-206	Human Values and Professional Ethics –II	2019	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
MB 302	Recombinant DNA technology & Bioinformatics	2019	This course teaches rDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries. Students of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering
MB 305	b) food microbiology	2019	Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms.
MB-306	b) Industrial food Microbiology	2019	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts
MB 405b	Bioprocess engineering	2019	After completing this course, the student will be able to define a bacterium, a fungus, a virus and archaea, give examples of structurally different microbes, and list microbes by their energy metabolism and carbon sources. The student will be able to evaluate the cultivation, enrichment and growth prevention methods for microbes. The student will be able to explain the roles of microbes in elemental cycles on Earth and, the waste decontamination methods based on microbial activities. He/she will be able to judge how microbes and enzymes could be applied in industry.
MB-406a	Fermentation technology	2019	The course aims to provide fundamental insights to exploit microbes for manufacturing of products which have huge industrial significance. The course blends science and engineering with various biochemical processes to obtain products such as food, chemicals, vaccines, medicine. At the end of the course, the student will have a better appreciation for the role of microbes in industry using technology Able to design procedures, record research methodology and interpret the research
MB-406b	Pharmaceutical Microbiology	2019	This course prepares the students in appreciating its benefits and applications in biotechnological, pharmaceutical, medical field.

39. INDUSTRIAL MICROBIOLOGY:

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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IMB-102	Enzymology & Microbial Physiology & Metabolism	2019	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
IMB-105	Introductory Microbiology	2019	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
IMB-106	Human Values and Professional Ethics – I	2019	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
IMB-202	Medical Microbiology	2019	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
IMB-204P	Practical – II Medical Microbiology	2019	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures. Be able to identify blood cell types.
IMB-205	Basics of Virology	2019	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plants viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Calciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
IMB-206	Human Values and Professional Ethics –II	2019	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
IMB 305	b) Bioprocess Engineering and Technology	2019	Give elaborate knowledge on Health care products. Provide in depth knowledge about microbial antibodies and recombinant products. Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.

IMB-306	a) Industrial Biotechnology	2019	Be able to gain knowledge on strain improvement. Be able understand the whole broth processing. Gain knowledge on production of industrial products
	b)Immuno Technology and Human Health	2019	Immunology and Human Health is designed to advance your understanding of the Immune system and to apply this knowledge to basic immunological research of human diseases. The immune system is composed of numerous cells and molecules that act in concert to maintain health, to overcome infection, prevent tumour growth and repair damaged tissues. The study of the immune system provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (bacteria, viruses, protozoans and fungi). This subject provides a greater understanding of the complexity of the immune system and its responses to stresses such as infection. It demonstrates how modulation, or activation, of the immune system can either help overcome infection or may lead to autoimmune disease. Understanding the immune system gives us the potential to develop therapies to control events such as infection or autoimmune conditions. This subject helps students expand their understanding of current concepts in immunology and the potential application of applied immunology in medicine, research and industry.
IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2019	Able to design procedures, record research methodology and interpret the research Able to design procedures, record research methodology and interpret the research
IMB-405	a) Biostatistics & Bioinformatics	2019	Be able to gain knowledge on basic concepts in statistics. Be able to design the experimental and statistical basics of biological assays. Be able to give familiarize with microbial genomes Be able to acquaint themselves with metagenomics Be able to learn basics of protein identification method Be able to gain knowledge on drug discovery
IMB-406	a) Microbes in Human Welfare	2019	Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.
	b) Medical and Diagnostic Microbiology	2019	Describe the aetiologies, epidemiology and basic mechanisms of pathogenesis of infectious diseases. Describe the basic principles of diagnosis, antimicrobial treatment, prevention and control of infectious diseases in the hospital and community. Describe the host immune system and explain the host response to infection Understand and interpret basic laboratory tests for the diagnosis of infectious diseases. Apply the principles of molecular and immunological techniques for the diagnosis of infectious diseases. Analyze and solve case studies involving bacterial and fungal agents

40. Physics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
	PHY 101	Classical Mechanics and Theory of Relativity	2019	<ol style="list-style-type: none"> 1. Formulate the Lagrangian and Hamiltonian mechanics concepts, solve the related problems 2. Learn the concepts of Poisson brackets, Hamilton-Jacobi equations and action angle variables. 3. Understand the Kepler's laws, Rutherford scattering, Euler's equations and solve the related problems 4. Learn the theory of relativity and its applications. 	
	PHY 102	Atomic and Molecular Physics	2019	<ol style="list-style-type: none"> 1. Understand the various basic concepts of atomic and molecular physics and know the analysis of different molecular spectra and then get the structural details. 2. Learn the concepts and importance of Zeeman effect, Stark effect and Paschen back effect 3. Under stand the importance of rotational, vibrational and electronic spectra 4. Learn the various applications of atomic and molecular spectroscopy in different fields. 	
	PHY 103	Solid State Physics	2019	<ol style="list-style-type: none"> 1. Understand different bonds in solids, importance of lattice vibrations, their models and elastic properties 2. Explain electronic properties of solids in classical, quantum and the nearly free electron model. 3. Able to classify materials as metals, insulators and semiconductors and sketch the band diagram for each 4. Learn Hall effect and Heyness-Schockley experiment and their uses, properties, theories and applications of superconductors. 	

	PHY 104	Analog and Digital Electronics	2019	<ol style="list-style-type: none"> 1. Understand the design and working of BJT/FET/ MOSFETs based electronic circuits 2. Observe the effect of negative feedback on amplifier parameters, types of negative feedback topologies. Perceive the effect of positive feedback on working of Op-Amps based Oscillators. 3. Learn and understand the basics of digital electronics, Boolean algebra, and be able to design the simple logic circuits and test/verify the functionality of the logic circuits. 4. Develop the skill to build, and troubleshoot analog and digital electronic circuits. 	
	PHY 105	General Physics lab. - I	2019	<ol style="list-style-type: none"> 1. Determining the value of Planck's constant and Seebeck coefficient of a thermocouple, and also measurement and behavior analysis of semiconductor, laser, thermistor and white light dispersion. 2. Structural determination using X-ray diffraction method. 3. Learn the applications of lasers 4. Able to develop skills related to the said experiments in Physics. 	
	PHY 106	Electronics lab. - I	2019	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Set up testing strategies and select proper instruments to evaluate the performance characteristics of the electronic circuit. 3. Able to learn the applications of operational amplifiers 4. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 	
	PHY 201	Statistical Mechanics	2019	<ol style="list-style-type: none"> 1. Learn different ensembles and partition functions and their applications to thermal properties of solids 2. Understand the concept of partition functions and its applications 3. Understand the concepts of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distributions. 4. Disseminate the applications of Maxwell's distribution of velocities and various applications of systems behaving as ideal Bose gas or Fermi gas. 	

PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2019	<ol style="list-style-type: none"> 1. Understand the laws related to electrostatics and magnetostatics 2. Learn about light propagation in various materials and understood properties of lasers and applications 3. Know holographic concept, use of Fourier transforms in optics 4. Learn the basics and construction of optical fibre and optical fibre applications
PHY 203	Mathematical Physics	2019	<ol style="list-style-type: none"> 1. Understand and apply the mathematical skills to solve quantitative problems in physics. 2. Apply Laplace and Fourier transforms in solving different problems of mechanics, electronics etc. 3. Solve different physical problems using numerical techniques 4. Understand complex variables and applications
PHY 204	Nuclear Physics and Analytical Techniques	2019	<ol style="list-style-type: none"> 1. know the concepts of nuclear reactions and their usefulness in nuclear reactors. 2. Learn the classification of elementary particles and its properties 3. apply the various analytical techniques in getting structural details of unknown compounds 4. understand the various advanced spectroscopic techniques and microscopic techniques
PHY 205	General Physics lab. - II	2019	<ol style="list-style-type: none"> 1. Using lasers in slit width calculation and refractive index measurement, 2. Understand phenomenon of interference through Young's modulus experiment 3. Intensity variation of light, photo transistor working, absorption and decay of nuclear adiation 4. Analyse the results and able to design the instruments

	PHY 206	Electronics lab. - II	2019	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 3. Under the architecture and working of 8085 microprocessor 4. Practice different types of wiring and instruments connections keeping in mind technical, Economical, safety issues. 	
	PHY 301	Quantum Mechanics – I	2019	<ol style="list-style-type: none"> 1. Solve problems in quantum mechanics using Schrodinger's equation and Dirac representation. 2. Grasp the concepts of different pictures and familiar with the applications 3. Know how the approximation methods applied to atomic, nuclear and solid-state physics. 4. Understand scattering theory, formulate and solve scattering equation- solve problems using this theory 	
	PHY 302	Physics of semiconductor devices	2019	<ol style="list-style-type: none"> 1. Classify different diodes and its importance in different applications 2. Gain theoretical knowledge on devices formation and able to fabricate devices 	

PHY 303	Specialization: A) Applied Spectroscopy-I B) Condensed Matter Physics-I C) Electronics-embedded systems	2019	1.Understand the molecular structure and importance of various molecular transition 2.know the rotational, vibrational and Raman spectroscopy of molecules and their various applications 3.Understand the concepts and instrumentation in different spectroscopic techniques 4.Learn about fluorescence and phosphorescence spectroscopy and their applications. 1. Learn the classification of growth techniques and its importance, able to analyze the defects and its importance in properties of solids, gain knowledge on defects importance in growth of crystals 2. Explain various magnetic phenomena and describe the different types of magnetic ordering based on the exchange interaction, and magnons and their importance 3.Understand different dielectric properties, differentiate between ferroelectric, anti-ferroelectric, piezoelectric and pyroelectric materials. 4.Learn excitons, photoconductivity, types of luminescence, decay mechanisms 1. Acquire knowledge about PIC microcontrollers embedded processors and their applications. 2. Develop programs for data transfer, arithmetic, logical and I/O port operations. 3. Develop program for PIC microcontroller timers, serial port and Interrupts using “C”. 4. Interface LCD, keyboard, ADC, DAC, sensors, relays, DC and stepper motor with PIC microcontroller.	
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	PHY 304	Elective: A) Photonics- I B) Solar Energy-Thermal Aspects C) Vacuum and Thin Film Technology	2019	1. Understand the fundamental properties of lasers and laser systems 2. Know about the different optoelectronic devices and their behaviour 3. Aware of wide variety of applications of opto-electronic components. 4. Learn different modulations of light 1. Understand the fundamentals of solar energy, particularly the thermal energy component. 2. Acquire knowledge on solar radiation measurement techniques and procedures. 3. Demonstrate skills related collector performance analysis through hands on experience 4. Learn the working of different solar thermal energy systems 1. Learn production of vacuum and working of various pumps and gauges, design of vacuum system and detection of leak in system. 2. Basic concepts in preparing thin films, outline the conditions for deposition of amorphous, crystalline and epitaxial films. 3. Understand the thin film growth mechanism 4. Understand the working of thickness measurement instruments	
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	PHY 305	Specialization-Lab.	2019	<ol style="list-style-type: none"> 1. Gain experience with some statistics to analyse data in laboratory. 2. Handle the spectrophotometers and could analyse the data. 3. Understand Zeeman effect practically 1. Identify the compounds based on qualitative analysis 1. Minority charge carrier current in calculation of band gap 2. Analysis of magnetic materials in terms of coercivity and saturation magnetization, 3. Creep importance in materials characteristics analysis 4. Transition temperature determination by finding dielectric constant, calculation of dispersion frequency of mono and diatomic lattices through electrical analog 1. Define the arithmetical and logical assembly language for microcontroller PIC 16F877A 2. Know the downloading procedure on hardware into flash ROM of PIC 16F877A 3. Show the testing data on a defined port wish board. 4. Competent to evaluate the data transfer response of PIC 16F877A. 	
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PHY 306	Elective - Lab	2019	<ol style="list-style-type: none"> 1. Demonstrate both the theory and experiments related to propagation and modulation of light 2. Learn the optical fibre working 3. Design the Hologram 4. Propose and design new experiments based on the verification of theory with available optical components 1. Demonstrate the skills related to measurement of direct, diffuse and global solar radiation. 2. Understand the working of a solar cell and its efficiency measurement 3. Verify the influence of different parameters on the solar cell efficiency 4. Design a solar module for a specific output current and voltage ratings. 1. Understand the working of rotary and diffusion pumps 2. Band gap determination of semiconductor thinfilm 3. Working of solar cell 4. Demonstrate the skill acquired in connection with thin film and device characterization 	
PHY 401	Quantum Mechanics - II	2019	<ol style="list-style-type: none"> 1. Learn distinguishability and indistinguishability of identical particles, construct symmetric and anti symmetric wave functions , students able to solve real problems 2. Grasp the concepts of spin and angular moment as well as their quantization and addition rules. Demonstrate angular momentum operators associated with spherical and symmetrical systems, able to obtain Clebsch –Gordon coefficients and learn its importance in atomic physics 3. Understand the principles of relativistic quantum mechanics and importance of Klein Gordon equation in solving real problems and know the concept of spin arising naturally from the Dirac equation 4. Learn different fields and its importance and gain knowledge about second quantization 	

	PHY 402	Advances in Physics	2019	<ol style="list-style-type: none"> 1. Understand the synthesis of nanomaterials, their application and impact on the environment. 2. Know the details of preparation and characterization of nanomaterials, micro and nanoscale devices. 3. Learn the basics of remote sensing, different payloads, sensors, satellite platforms. 4. Get the concept of image processing & interpretation and digital data transmission and storage. 	
	PHY 403	Specialization: A) Applied Spectroscopy-II B) Condensed Matter Physics-II C) Electronics-Wireless Communications	2019	<ol style="list-style-type: none"> 1. Have the knowledge on crystal field theory and the effect of weak crystal field on S, P, D and F terms. 2. Understand the importance of rare earth doped materials and able to evaluate various laser parameters. 3. Know the instrumentation techniques used in various spectrophotometers and uses of various detectors. 4. Acquire the knowledge on two photon spectroscopy. <ol style="list-style-type: none"> 1. Learn the relation between stress and strain and gain knowledge on elastic constants and velocity of elastic waves in different directions 2. Gain understanding on classical theory of specific heat and quantum theory of specific heat, able to understand Gruneisen parameter and lattice thermal conductivity 3. Know theories of different bands, Fermi construction and experimental determination of Fermi surface 4. Classify, know properties and applications of amorphous semiconductors, liquid crystals and polymers. <ol style="list-style-type: none"> 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Understand the importance of different communications 4. Fetch details in handling the fabrication, concepts of instrumentation and circuit design. 	

	PHY 404	Elective: A) Photonics - II B) Solar Energy- Photovoltaic Aspects C) Properties and Applications of Thin Films	2019	1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Measure and analyze the chemical composition and microstructure of thin films. 2. Understand the electrical transport mechanism and optical behavior of thin films. 3. Able to understand the optical properties of thinfilms 4. Learn the various general and technical applications of thin films in day-to-day life.	
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	PHY 405	Specialization-Lab. – II / Project Work	2019	<ol style="list-style-type: none"> 1. Use standardized material to determine an unknown concentration. 2. Handle the spectrophotometers and could analyse the data. 3. Learn the applications of ESR 4. Acquire basic knowledge in the field of research. <ol style="list-style-type: none"> 1. Magnetic susceptibility determination, liquid crystal phases with temperature, 2. Working of temperature sensor, heat capacity calculation 3. Resistance variation and measurement in semiconductor with temperature 4. Able to analyze the materials and its behavior <ol style="list-style-type: none"> 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Gain hands on experience and will be able to envisage the concepts more clearly. 4. Know the fabrication process, concepts of instrumentation and circuit design. 	
	PHY 406	Elective – Lab. - II / Project Work	2019	<ol style="list-style-type: none"> 1. Get the experience on literature collection 2. Get the experience on selection of a problem independently related to recent work 3. Able to plan and execute the problem 4. Develop skills related to presentation of data, analysis discussion of the results and draw conclusions. 	

41. Psychology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	PSY 101	General Psychology-I	2019	<ul style="list-style-type: none"> • To understand the concepts and scope of psychology • To comprehend the biological basis of behavior • To study the perception and learning theories
2	PSY 102	Social Psychology	2019	<ul style="list-style-type: none"> • To understand the concepts of social psychology • To comprehend the social perception and cognition.

				<ul style="list-style-type: none"> • To study the socialization and attitudes
3	PSY 103	Psychopathology-I	2019	<ul style="list-style-type: none"> • To understand the abnormal behavior and historical and current trends • To comprehend the models of abnormal behaviour and approaches to therapies
4.	PSY 104	Psychological Measurements-I	2019	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
5	PSY 105P	Practical-I&II	2019	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
6.	PSY-106	Human Values and Professional Ethics-I	2019	
7.	PSY 201	General Psychology-II	2019	<ul style="list-style-type: none"> • To understand fundamentals of motivation and emotion • To understand basic concepts of memory and forgetting • To comprehend the thinking, intelligence and personality of individuals
8.	PSY 202	Applied Social Psychology	2019	<ul style="list-style-type: none"> • To understand the Social Influence, Social Exchange Process in social behaviour. • To comprehend the Prejudice and Discrimination and group and individuals.
9.	PSY 203	Psychopathology-II	2019	<ul style="list-style-type: none"> • To understand anxiety and mood disorders and somatic disorders. • To study Psychosis and Cognitive Disorders across life span
10.	PSY 204a	Psychological Measurements & Statistics	2019	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
	PSY 204b	Research Methodology	2019	<ul style="list-style-type: none"> • To get knowledge of psychological tests and their use

				<p>in diagnosis.</p> <ul style="list-style-type: none"> • To make students able to diagnose patients with the help of projective tests. • To get understanding of different diagnostic systems. • Learn how to take case history of patients. • To be able to make differential diagnosis.
	PSY 204c	Computer Applications in Psychological Research	2019	<ul style="list-style-type: none"> • To understand the basic components of computer and working in Ms Office, power point and internet services. • To comprehend the application of computer knowledge through creating emails, scientific journals and data scoring
11	PSY 205P	Practical - I & II	2019	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
12	PSY 206	Human values and Professional Ethics-II	2019	
13	PSY 301	Lifespan Developmental Psychology - Infancy to Adolescence	2019	<ul style="list-style-type: none"> • To understand the scope of life span development of infancy and babyhood • To comprehend the Early and Late Childhood and Adolescence.
14.	PSY 302	Personality	2019	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. To understand the Assessment of personality
15	PSY 303	Counseling Psychology-I	2019	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and techniques
16	PSY 304a	School Psychology	2019	<ul style="list-style-type: none"> • To introduce nature of school psychology • To help children with emotional, social, and academic issues.

				<ul style="list-style-type: none"> • To collaborate with parents, teachers, and students to promote a healthy learning environment.
	PSY 304b	Organizational Behaviour and HRM	2019	<ul style="list-style-type: none"> • To understand organization and the Individual differences • To comprehend the motivation and leadership To study the decision making and organizational effectiveness.
	PSY 304c	Health Psychology	2019	<ul style="list-style-type: none"> • To understand the need of Health psychology and various models related to health and illness. To comprehend the health behaviour enhancement and management
	PSY 304d	Psychology of Disability	2019	<ul style="list-style-type: none"> • To understand historical development – Models of disabilities in the past and present scenario To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
17	PSY 305P	Practical - I & II	2019	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
18	PSY 306	Personality Development (OE)	2019	<ul style="list-style-type: none"> • To study thebiological, psychological and socio cultural determinants &Soft Skills • To help determinants and development. • To understand the Assessment of personality
19	PSY 401	Lifespan Developmental Psychology – Adulthood and Later Maturity	2019	<ul style="list-style-type: none"> • To understand the scope of life span development of Adulthood and Later Maturity. • To comprehend the Adulthood and Later Maturity.
20	PSY 402	Theories of Personality	2019	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. • To understand the Assessment of personality
21	PSY 403	Counseling Psychology - II	2019	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and

				techniques
22	PSY 404a	Psychology of Aging – Applied Aspects	2019	<ul style="list-style-type: none"> • To study and understand the aging from maturity to old age. • A form of discrimination against older adults based on their age. • To notice gerontology and issues
	PSY 404b	Consumer Behaviour and Marketing	2019	<ul style="list-style-type: none"> • To understand concept of consumer behaviour and market research • To comprehend the economic, social and psychological theory of buying motives. • To study the effect of advertising, sales promotion, branding and packaging
	PSY 404c	Rehabilitation Psychology	2019	<ul style="list-style-type: none"> • To understand historical development – Models of disabilities in the past and present scenario • To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
23	PSY 405P	Practical I & II	2019	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
24	PSY 406	Life Skills (OE)	2019	<ul style="list-style-type: none"> • To learn the concept of life skills and its importance in relation to personality development of an individual. • To become aware of the components of life skills and the method of imparting knowledge of life skills.

COUNSELLING PSYCHOLOGY:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	PSY 101	General Psychology-I	2019	<ol style="list-style-type: none"> 1. Understood the concepts and scope of psychology 2. Comprehended the biological basis of behavior 3. Studied the perception and sensation 4. Understood the concepts and learning theories 	
2.	PSY 102	Social Psychology	2019	<ol style="list-style-type: none"> 1. Understood the concepts of social psychology 2. Comprehended the social perception and cognition. 3. Studied the Socialization 4. Understood the meaning and theories attitudes 	
3.	PSY 103	Psychopathology-I	2019	<ol style="list-style-type: none"> 1. Understood the meaning abnormal behavior and historical and current trends 2. Comprehended the models of abnormal behaviour and approaches to therapies 3. Learned about classification and assessment of abnormal behaviour 4. Able to evaluate different approaches to therapies for abnormal behaviour 	
4.	PSY 104	Psychological Measurements-I	2019	<ol style="list-style-type: none"> 1. Understood the assessment and psychological measurements 2. Comprehended the development of psychological tests and principles of test construction. 3. Learned the Principles of Test Construction 4. Understood the test Development and test Standardization Procedures 	
5.	PSY 201	General Psychology-II	2019	<ol style="list-style-type: none"> 1.The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting 3. Comprehended the thinking and intelligence 	

6.	PSY 202	Applied Social Psychology	2019	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and individuals. 	
7.	PSY 203	Psychopathology-II	2019	<ol style="list-style-type: none"> a. Understood anxiety and mood disorders b. Acquainted with somatic disorders. c. Studied Psychosis and Cognitive Disorders d. Understood Psychological Disorders Across the Life Span 	

8.	PSY 204	<ul style="list-style-type: none"> a. Psychological Measurements & Statistics b. Research Methodology c. Computer Applications in Psychological Research 	2019	<ul style="list-style-type: none"> 1. The students acquainted with intelligence and achievement tests 2. The students learned the measurement of personality tests 3. They are clear in understanding the Statistics for Psychological Measurement 4. They have knowledge on Distribution of Scores on Variables <p>1. Understood basic research and applied research including experimental research.</p> <ul style="list-style-type: none"> 1. The students comprehended the problem & hypothesis 2. Gained knowledge on Sampling & Data Collection 3. Understood the application of research designs <p>1. Understood the basic components of computer</p> <p>2. Acquainted with Ms Office, power point and internet services.</p> <p>3. Comprehended the application of computer knowledge through creating emails, scientific journals and data scoring</p> <p>4. Able to understand Statistical Packages and its application</p>	
9.	CPSY 301	Counselling Process	2019	<ul style="list-style-type: none"> 1. Understood the counseling as helping profession 2. To acquire the relation with other helping professions 3. To know the legal and ethical issues 4. Developed the importance of verbal and non 	

10.	CPSY 302	Counselling Skills	2019	<ol style="list-style-type: none"> 1. Understood the micro-skills of counseling through a series of practices. 2. Got an idea about who to understand the people and interpret their feelings with positive appreciation 3. To provide a space where participants can grow, in the sense of allowing an encounter with them first and based on this encounter to achieve a better understanding of how they impact on other people. 4. The ability to examine and assess the clients with scientific manner.
11.	CPSY 303	Therapeutic Approaches in Counselling –I	2019	<ol style="list-style-type: none"> 1. Understood the various Therapeutic Approaches of counseling. 2. Understood the techniques relevant to therapies. 3. To acquires the basic procedures. 4. Learned how to touch in the insight of the client
12.	CPSY 304A	a. Foundations of Personality	2019	<ol style="list-style-type: none"> 1. Understood nature of personality. 2. Realized the determinants of personality 3. Found that the development of Personality. 4. Understood the Assessment of personality
13.	CPSY 304B	b. Lifespan Developmental Psychology – Infancy to Adolescence	2019	<ol style="list-style-type: none"> 1. Exposed the students to the basics of human development 2. Helped the student understand the stages of development 3. Understood the biological, social and emotional development 4. Able to evaluated the behavior of the individual at various stages.

14.	CPSY 304C	c. Psychology of Disability	2019	<ol style="list-style-type: none"> 1. Understood the historical development and models of disabilities 2. Acquire the knowledge of assessment of disability. 3. Expertised on handling the disabled Behavior 4. Collected the knowledge about various service organizations
15.	CPSY 305	Practical I & II	2019	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills 3. The students acquainted with soft skills 4. They learned more on Soft skills
16.	CPSY 401	Applications of Counselling in Special Areas	2019	<ol style="list-style-type: none"> 1. Understood how to handle the client with various problems and hailing into different age groups. 2. Learned how to handle the clients with specific problems 3. To attained what is career, personal, vocational and other applied areas of counseling 4. Gained how to organize Counseling programs to handle special concerns in Different social settings.
17.	CPSY 402	Therapeutic Approaches in Counselling –II	2019	<ol style="list-style-type: none"> 1. Understood the therapeutic approaches of counseling 2. Improve the major skills in therapeutic techniques 3. Gained specific methods involved in therapy 4. Adopted the different psycho therapeutic models of counseling.

18.	CPSY 403	Family Counselling	2019	<ol style="list-style-type: none"> 1. Understand the need and importance of family counseling. 2. Improved how to handle the family issues 3. To maximized use of tools in counseling 4. Learned the specific skills to handle family issues.
19.	CPSY 404A	a. Theories of Personality	2019	<ol style="list-style-type: none"> 1. Understood the Psychoanalytic Approach 2. Learned on behavioural approaches to personality. 3. The students comprehended the Humanistic approach 4. The students acquainted with the eastern theories of personality
20.	CPSY 404B	b. Lifespan Developmental Psychology – Adulthood and Later Maturity	2019	<ol style="list-style-type: none"> 1. Understood about adult hood 2. Aware of infancy late adult hood problems 3. Identified the early and late old age issues. 4. Acquired the developmental tasks at all ages.
21.	CPSY 404C	c. Rehabilitation Psychology	2019	<ol style="list-style-type: none"> 1. The students understood historical development – Models of disabilities in the past and present scenario 2. The students comprehended Assessment of Disability, Psychological Aspects 3. The students are aware of Behavioral Management 4. They acquainted with Organizational services
22.	CPSY 405	Practical I & II	2019	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills. 3. The students have learned more on Life Skills in Specific 4. They acquainted with Self management skills

41. Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	ST - 101	Linear Algebra	2019	<ol style="list-style-type: none"> 1. Students understood for estimation of elementary transformations in matrix and their solutions. 2. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 3. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 4. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	
	ST - 102	Probability Theory	2019	<ol style="list-style-type: none"> 1. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 2. Students also know the weak law, strong law and central limit theorem and their importance. 3. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	

ST - 103	Distribution Theory	2019	<ol style="list-style-type: none"> 1. Students know about different continuous and discrete distributions and their properties. 2. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 3. Students get the knowledge of the statistical Tests and their real life uses and applications. 4. Students get the knowledge of Regression and Correlations and their real-life applications 	
ST - 104	Practical-I (75 Practical + 25 Record)	2019	<ol style="list-style-type: none"> 1. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 2. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 3. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	
ST - 105	Statistical Computing	2019	<ol style="list-style-type: none"> 1. Students get the basic Programming Skills of C and C++. 2. Students learnt how the Data entre in the Excel with Headings. 3. Students get the knowledge of creating data ase using the MS-Access. <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	

ST - 106	Human Values and Professional Ethics-I	2019	<ol style="list-style-type: none"> 1. Students get the knowledge of the Ethical values. 2. Students get the idea about the Value education. 3. Students learn how to behave in Society. 4. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's. 	
ST - 201	Statistical Inference	2019	<ol style="list-style-type: none"> 1. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 2. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 3. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). <p>They can also calculate the problems related to point estimation and interval estimation.</p>	
ST - 202	Multivariate Analysis	2019	<ol style="list-style-type: none"> 1. Students learnt about importance of multivariate variables and their distributions 2. T^2, D^2, MANOVA models are understood and know it's importance. 3. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	

	ST-203 A & B & C	<p>(a) Linear Models and Applied Regression Analysis</p> <p>(b) Stochastic Processes</p> <p>(c) Mathematical Analysis</p>	2019	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 1. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 2. They know R^2, adjusted R^2 and C_p criteria for model selection. 3. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 1. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 2. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 3. Understand the consequences of the Intermediate value theorem for continuous function. 4. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 1. Students get the knowledge of real no.'s and set theory and their theories. 2. Students easily earn the knowledge of the sequencing theory. 3. Students get the knowledge if the integrations and their applications in the real life. 	
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ST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2019	<ol style="list-style-type: none"> 1. Students know about the solving of Numerical problems related to Multivariate data. 2. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data. 3. They can also use the statistical tools and techniques for analyzing the statistical data. <p>Students can solve the agriculture related problems using the Regression Methods.</p>	
ST - 205	Sampling Techniques	2019	<ol style="list-style-type: none"> 1. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models. 2. Students studied non-Sampling errors and different remedies. 3. Implement Cluster sampling, Ratio and Regression estimation in real life problems 4. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's 	
ST - 206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 1. Students get the Knowledge of Status of Women in the family and society. 2. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners. 3. Students get the idea about the environmental Ethics. 4. Students Get the knowledge of Human Rights. 	

ST - 301	Econometric Methods	2019	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
ST - 302	Design and Analysis of Experiments	2019	<ol style="list-style-type: none"> 1. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 2. Students understood about Latin squares and their construction, missing plot technique etc. 3. Students explained about Incomplete Block Designs and their analysis, etc. 4. Understand the basic terms used in design of experiments by using appropriate experimental methods 	
ST -303	Operations Research-I	2019	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

ST -304	Practical-III (75 Practical + 25 Record)	2019	<p>Students can understand the Statical Methos in Economical Views.</p> <p>Students solved the Numerical problems related to operations research.</p> <p>Students Understand the Life Tables in Demography.</p> <p>Students can understand how the statistics use in biological aspects.</p>
ST-305A	(a)Bio-Statistics	2019	<ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models. 3. Apply the concept of deterministic and stochastic models on simple and general epidemics. 4. Understand linearization of dynamical systems with various dimensions.
ST - 306	(a) Statistics for Biological and Earth Sciences	2019	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students used Advanced statistics tools with working illustrations.

	ST - 401	Time Series Analysis and Forecasting Methods	2019	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. 4. Check and validate models with its residual analysis and diagnostic checking. 	
	ST - 402	Demography and Official Statistics	2019	<ol style="list-style-type: none"> 1. Students know the growth rates, life tables, GRR, NRR and growth models. 2. Students understood about gene frequencies, genotypes, phenotypes etc. 3. Students learnt about population census methods, organizations in India and their functions. 4. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 	

	ST - 403	Operations Research-II	2019	<ol style="list-style-type: none"> 1. To perform Dynamic programming and their applications and computation procedure with illustration. 2. To discuss different Queuing models steady state solutions with examples. 3. To explain Inventory models with and without shortages, S-splicity, EOQ estimation with simple examples. <p>To understand Replacement problems such as block and age replacement problems, individual and group replacement policies with examples.</p>	
	ST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2019	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	

ST-405 A	(a) Statistical Process and Quality Control	2019	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
ST-405 B	Statistics for research, industry and Communitydevelopment	2019	<ol style="list-style-type: none"> 1. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 2. Students can understand the basic of research blooms taxonomy of learning levels. 3. Find the topic from current research in statistics education. 4. Students can apply the tools in design, research and developments. 	

	ST-405 C	Advanced Econometric Models	2019	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed probit, logit models and their estimation. <p>Students can understand the qualitative and limited dependent variable models.</p>	
	ST - 406 A	Business Analytics	2019	<ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students studied basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students performed advanced statistics tools for solving the problems. 	

	ST-406 B	(b) Survival Analysis	2019	<ol style="list-style-type: none"> 1. Students learnt about survival functions, their estimating methods, Distributions and their comparison for survival distributions. 2. Understand the elements of reliability, hazard function and its applications. 3. Understand the concept of censoring, life distributions and ageing classes. 4. Estimate nonparametric survival function of the data. 	
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Applied Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	APST - 101	Linear Algebra	2019	<ol style="list-style-type: none"> 5. Students understood for estimation of elementary transformations in matrix and their solutions. 6. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 7. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 8. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	

APST - 102	Probability Theory	2019	<ol style="list-style-type: none"> 4. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 5. Students also know the weak law, strong law and central limit theorem and their importance. 6. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	
APST - 103	Distribution Theory	2019	<ol style="list-style-type: none"> 5. Students know about different continuous and discrete distributions and their properties. 6. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 7. Students get the knowledge of the statistical Tests and their real life uses and applications. 8. Students get the knowledge of Regression and Correlations and their real-life applications 	
APST - 104	Practical-I (75 Practical + 25 Record)	2019	<ol style="list-style-type: none"> 4. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 5. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 6. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	

APST - 105	Statistical Computing	2019	<ol style="list-style-type: none"> 4. Students get the basic Programming Skills of C and C++. 5. Students learnt how the Data entre in the Excel with Headings. 6. Students get the knowledge of creating data ase using the MS-Access. <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	
APST - 106	Human Values and Professional Ethics-I	2019	<ol style="list-style-type: none"> 5. Students get the knowledge of the Ethical values. 6. Students get the idea about the Value education. 7. Students learn how to behave in Society. 8. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's. 	
APST - 201	Statistical Inference	2019	<ol style="list-style-type: none"> 4. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 5. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 6. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). <p>They can also calculate the problems related to point estimation and interval estimation.</p>	

	APST - 202	Multivariate Analysis	2019	<ol style="list-style-type: none">4. Students learnt about importance of multivariate variables and their distributions5. T^2, D^2, MANOVA models are understood and know it's importance.6. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	
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	APST-203 A & B & C	(a) Linear Models and Applied Regression Analysis (b) Stochastic Processes (c) Mathematical Analysis	2019	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 4. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 5. They know R^2, adjusted R^2 and C_p criteria for model selection. 6. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 5. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 6. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 7. Understand the consequences of the Intermediate value theorem for continuous function. 8. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 4. Students get the knowledge of real no.'s and set theory and their theories. 5. Students easily earn the knowledge of the sequencing theory. 6. Students get the knowledge if the integrations and their applications in the real life. 	
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APST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2019	<p>4. Students know about the solving of Numerical problems related to Multivariate data.</p> <p>5. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data.</p> <p>6. They can also use the statistical tools and techniques for analyzing the statistical data.</p> <p>Students can solve the agriculture related problems using the Regression Methods.</p>
APST - 205	Sampling Techniques	2019	<p>5. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models.</p> <p>6. Students studied non-Sampling errors and different remedies.</p> <p>7. Implement Cluster sampling, Ratio and Regression estimation in real life problems</p> <p>8. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's</p>
APST - 206	Human Values and Professional Ethics-II	2019	<p>5. Students get the Knowledge of Status of Women in the family and society.</p> <p>6. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners.</p> <p>7. Students get the idea about the environmental Ethics.</p> <p>8. Students Get the knowledge of Human Rights.</p>

APST - 301	Applied Econometrics	2019	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
APST - 302	Experimental Design and Applications	2019	<p>Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests.</p> <p>Students understood about Latin squares and their construction, missing plot technique etc.</p> <p>Students explained about Incomplete Block Designs and their analysis, etc.</p> <p>Understand the basic terms used in design of experiments by using appropriate experimental methods.</p>	
APST -303	Applied Operations Research	2019	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

APST -304	Practical	2019		<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. <p>Students can understand how the statistics use in biological aspects.</p>	
APST-305A	(a)Bio-Statistics	2019		<ol style="list-style-type: none"> 5. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 6. Describe single and multi-species population growth models. 7. Apply the concept of deterministic and stochastic models on simple and general epidemics. 8. Understand linearization of dynamical systems with various dimensions. 	
APST - 306	(a) Statistics for Biological and Earth Sciences	2019		<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 5. Students learnt about Graphs, measures of averages, measures of dispersion etc. 6. Students understood about Basic probability and important distributions with workout examples. 7. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 8. Students used Advanced statistics tools with working illustrations. 	

APST - 401	Applied Forecasting Methods	2019		<ol style="list-style-type: none"> 1. 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. <p>Check and validate models with its residual analysis and diagnostic checking.</p>	
APST - 402	Applied Demography and Official Statistics	2019		<ol style="list-style-type: none"> 5. Students know the growth rates, life tables, GRR, NRR and growth models. 6. Students understood about gene frequencies, genotypes, phenotypes etc. 7. Students learnt about population census methods, organizations in India and their functions. 8. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 9. . 	
APST - 403	Reliability Theory & Survival Analysis	2019		<ol style="list-style-type: none"> 1. Students learnt about and survival analysis with their related distributions, relationships, non-parametric methods for computing survival analysis. 2. Estimate nonparametric survival function of the data. 3. Explain test of exponentiality against nonparametric classes, two sample problems. <p>Understand the elements of reliability, hazard function and its applications.</p>	

APST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2019	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	
APST-405 A	(a) Statistical Process and Quality Control	2019	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
APST-405 B	Statistics for research, industry and Communitydevelopment	2019	<ol style="list-style-type: none"> 5. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 6. Students can understand the basic of research blooms taxonomy of learning levels. 7. Find the topic from current research in statistics education. 8. Students can apply the tools in design, research and developments. 	

	APST-405 C	Actuarial Statistics	2019	<ol style="list-style-type: none"> 1. Students get the knowledge of the Economic interest rates and discount rates. 2. Students know how to construct the life tables based on the Expectancy. 3. Students to get awareness of the life annuities. 4. Students ensure how to build joint life annuities and life survivor annuities. 	
	APST - 406 A	Statistics for Marketing Research	2019	<ol style="list-style-type: none"> 1. Students learnt about Research design and how to frame questionnaire etc. 2. Statistics relating to research like univariate test like Z, t, F, ANOVA, CRD, RBD and LSD are done. 3. Multivariate statistical techniques like factor analysis, dissemination analysis and cluster analysis are used. 4. Students can understand how the marketing is happening in the real life. 	

	APST-406 B	(b) Statistical analysis using SPSS	2019	<ol style="list-style-type: none"> 1. Able to create and manipulate vectors, matrices, arrays, data frames and lists. 2. Should be able to work with character data, factor data and dates. 3. Able to write scripts and function in R and read data from .csv files, EXCEL files and SPSS files. <p>Able to use built-in functions to answer questions relating to probability distributions, parametric and</p>	
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43. Virology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	VR-101	General Microbiology	2019	<ul style="list-style-type: none"> - To learn about fundamentals aspects of microbiology including origin, evolution of microorganisms, different groups of microorganisms and their importance, microscopy principles and applications, morphology, and structure of bacteria, - To learn about Microbiological media, isolation, cultivation and enumeration methods of microorganisms, microbial growth characteristics, maintenance, and preservation of microbial cultures. - To develop knowledge on microbial taxonomy, transport of nutrients in microbes, control strategies of microorganism, - To develop knowledge on general characteristics, structure and reproduction of fungi, algae, and protozoan parasites.
2	VR-102	General Virology	2019	<ul style="list-style-type: none"> - Learn the discovery, nature, origin and evolution of viruses and the physical, biochemical, and biological properties of viruses, criteria used for nomenclature and classification of bacteria, plant and animal viruses.

				<ul style="list-style-type: none"> - Describe the methods used for isolation, cultivation, and purification of viruses and criteria of purity. - Define biological, physical, biochemical, and serological methods used for quantitation of viruses, major characteristics of important plant and animal virus families and biology and applications of major RNA and DNA viruses of insects. - Understand the biology of major bacteriophages, algal and fungal viruses, subviral agents and importance of viruses in human welfare with suitable examples.
3	VR-103	General Microbiology and Virology	2019	<ul style="list-style-type: none"> - Define laboratory safety measures that needs to be followed in Virology and Microbiology laboratories and know the concepts and protocols of using different sterilization methods and preparation of media. - Acquire the practical skills to use various methods for cultivation, staining and characterization of different microorganisms and to check their stability under various conditions. - Learn to isolate bacteriophages from different sources and cultivate viruses in embryonated eggs and plants. - Demonstrate the mechanical, aphid and graft transmission of plant viruses and methods used to check the stability of viruses and determine the effect of virus infection on plants through chlorophyll estimation.
4	VR-104	Biological Chemistry and Analytical	2019	<ul style="list-style-type: none"> - : Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of proteins, carbohydrates, lipids, and nucleic acids.

		Techniques		<ul style="list-style-type: none"> - Know how to isolate and check the activity of enzymes from various sources. - Learn to use ultrafiltration, chromatography, and electrophoresis techniques for isolation and characterization of biomolecules. - Acquire the skills to use spectroscopic and centrifugal methods for isolation and characterization of biomolecules apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
5	VR-105	Biological Chemistry and Analytical Techniques	2019	<ul style="list-style-type: none"> - Acquire knowledge on major elements and biomolecules of life and their chemical composition, bonding and primary characteristics, classification, structure, functions of carbohydrates, nucleic acids, amino acids, peptides, proteins and lipids and mechanism of protein synthesis and degradation. - Understand the types, properties, biological functions of enzymes, nucleic acids, hormones, growth regulators, vitamins, porphyrins and other pigments and nucleic acid metabolism. - Describe the approaches involved in characterization and concentration of biomolecules and discuss the principles and applications of various techniques applied for characterization of biomolecules in biological research such as chromatography, centrifugation, electrophoresis, - Learn about electrochemical techniques, basic principles and applications of flow cytometry, radioisotopes, spectroscopy, amino acid, and nucleotide sequencers
6	VR-106	Human values and Professional ethics - I	2019	<ul style="list-style-type: none"> - To enable the students to imbibe and internalize the moral values and ethical principles - 2. To learn ethics moral and social values and ethical behavior in the personal and Professional lives. - 3.To learn the rights and responsibilities and to appreciate the rights of others and to create awareness on religious values and other good acts and facts of life. - 4.To acquire knowledge about the important facts of Bhagavad Gita, values hidden in religions, religious tolerance and aware of crime, and punishment

				theories
8	VR-201	Microbial Genetics and Molecular Biology	2019	<ul style="list-style-type: none"> - To gain understanding of prokaryotic and eukaryotic genome organization, modern concept of genes, plasmids, mobile genetic elements - To learn gene transfer and mapping mechanisms in bacteria, genetics of viruses and requirements and mechanism of DNA replication. - To attain knowledge about the mechanism of DNA damage and repair, concept of mutations and their importance, processes involved in transcription, - To attain knowledge about the mechanism of translation, regulation of gene expression and gene silencing mechanisms.
9	VR-202	Recombinant DNA Technology	2019	<ul style="list-style-type: none"> - To learn basic and advanced tools and techniques, approaches and strategies used in gene manipulation in prokaryotic and eukaryotic systems. - 2. To learn the major techniques and applications of gene manipulation such as DNA sequencing, nucleic acid hybridization - 3. To understand the strategies used for gene expression in heterologous hosts, proteomics, genomics. - 4. To generate knowledge on genetically modified plants and animals and applications/implications of genetic engineering in agriculture, medicine, industry, and biology.
10	VR-203	Microbial Genetics and Molecular Biology & Recombinant DNA Technology	2019	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up Cell and Molecular Biology laboratory with ribonuclease free environment. - Isolate and estimate DNA and RNA from microbial, plant and animal tissues and demonstrate curing of plasmids, replica plating techniques, conjugation in bacteria, Ames test, induction of mutations in bacteria by physical/chemical agents, isolation of microbial mutants by gradient plate method. - Acquire practical skills to isolate plasmids from bacteria, restriction enzyme digestion of recombinant plasmid DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the preparation of southern and

				<p>dot blots for hybridization.</p> <ul style="list-style-type: none"> - Solve the problems related to Molecular Genetics/Biology and Recombinant DNA Technology and compete for the competitive exams such as UGC-CSIR-NET, GATE, APSET and other scientific examinations.
11	VR-204	Cell biology and Immunology	2019	<ul style="list-style-type: none"> - Acquire the practical skills in conducting various experiments related to Cell Biology such as isolation of cells, preparation of cell cultures. - Learn isolation of mitochondria, study of chromosomes, identification of stages of mitosis in onion root tips. - Identify of primary and secondary lymphoid organs in virtual animal model and illustrate basic immunology techniques such as counting of RBC and WBC, estimation of hemoglobin, identification of the blood groups and Rh. - Demonstrate antigen-antibody interactions by conducting <i>in vitro</i> serological tests such as immunodiffusion and immune-electrophoresis, DAC-ELISA, Dot-ELISA and western blotting and apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes.
12	VR-205	Cell biology and Immunology	2019	<ol style="list-style-type: none"> 1. To understand the structure and contents of prokaryotic and eukaryotic cells, general principles and pathways of cell communication and cell signaling. 2. To describe the concepts and methodologies of plant and animal tissue and organ cultures, cell counting and introduction to stem cell cultures. 3. To learn about the historical perspectives of immunology, innate and adaptive immunity mechanisms, various components of immune system, antigens, antibodies, <i>in vitro</i> and <i>in vivo</i> antigen and antibody interactions and 4. To understand the mechanism of humoral and cell mediated immune responses, immune effector mechanisms, MHCs, hypersensitivity reactions, autoimmune and immunodeficiency disorders, transplantation and transfusion immunology and

				concepts and applications of conventional and modern vaccines.
13	VR-206	Human values and Professional ethics - II	2019	<ul style="list-style-type: none"> - Understand the definition of value education, concept of human and family values, components, structure, and responsibilities of family system and acquire reflective thinking, rational skepticism. - Describe the moral responsibilities and ethical issues of medical and health care professionals, avoid unethical things, learn ethical issues raised in genetic engineering and new biological technologies. - Learn to practice ethical standards in business by understanding ethical theories and maintain work ethics to build trust between businessman and consumer and avoid unethical behavior and ethical abuse and develop scientific temper, digital literacy. - Learn to practice environmental ethics by taking responsibility to protect environment and ecosystem and understand the importance of maintenance of social ethics and ethics of media.
14	VR-301	Plant Virology	2019	<ul style="list-style-type: none"> - Understand the induction of plant virus diseases, virus-host interactions and movement strategies. - Learn the vector and non-vector modes of plant virus transmission, virus-vector relationships and molecular mechanisms involved in virus vector interactions and the approaches used for identification and characterization of the viruses and virus strains. - Acquire the knowledge on plant virus spread and survival in nature and approaches used to detect plant viruses and diseases. - Describe the approaches used for the control and management of plant viruses and vectors and strategies used for acquiring plant virus resistance.
15	VR-302	Plant Viruses and	2019	<ul style="list-style-type: none"> - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases

		Diseases		<p>of cereals and millets, oil seed crops</p> <ul style="list-style-type: none"> - To understand the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of vegetable, and tuber crops. - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of food legumes, fruit crops - To acquire knowledge on the distribution, incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the virus diseases of cash, spice and beverage crops and flowering and foliage ornamentals.
16	VR-303	Plant Virology or Plant Viruses and Diseases	2019	<ul style="list-style-type: none"> - Identify major virus diseases of local economically important crop plants and weeds through theory exercises, local field surveys, agricultural research station visits. - Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts. - :Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules and generation of virus free plants through apical meristem tip culture. - Identify local plant virus vectors, determine virus disease incidence, and progress curves through local field visits. -
17	VR-304	a) Molecular Virology (OR)	2019	<ul style="list-style-type: none"> - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, clarification using organic solvents and low speed centrifugation, precipitation using sodium chloride or ammonium sulphate or polyethylene glycol or differential centrifugation, preparation of step and linear density gradients, further

				<p>purification of viruses using sucrose density gradient centrifugation and final pelleting by ultrafiltration or ultracentrifugation and to check the quality and quantity of viruses using spectroscopy or transmission electron microscopy.</p> <ul style="list-style-type: none"> - Isolate virus coat proteins and determine its quantity and molecular weight through spectroscopy and SDS-PAGE, respectively. - Isolate virus nucleic acids (dsRNA, RNA and DNA), estimate their quantity by spectroscopy, determine their size and molecular weight through agarose gel electrophoresis. Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation.
		b) Biostatistics and Bioinformatics		<ul style="list-style-type: none"> - Learn how to use MS office and create, edit tables in MS word. - Develop knowledge to do simple statistics with Excel, to create statistical graphs and spread sheets in Excel for biological applications. - Use internet, web tools, databases, and search engines for designing, planning, and executing biological research experiments or investigations. - Analyze viral genome sequences using programs like Bio Edit and learn to use NCBI, EMBL for nucleic acid/protein analysis and phylogenetic tree construction. -
18	VR-305	(a) Molecular Virology (OR)	2019	<ul style="list-style-type: none"> - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, clarification using organic solvents and low speed centrifugation, precipitation using sodium chloride or ammonium sulphate or polyethylene glycol or differential centrifugation, preparation of step and linear density gradients, further purification of viruses using sucrose density gradient centrifugation and final pelleting by ultrafiltration or ultracentrifugation and to check the quality and quantity of viruses using spectroscopy or transmission electron microscopy.

				<ul style="list-style-type: none"> - Isolate virus coat proteins and determine its quantity and molecular weight through spectroscopy and SDS-PAGE, respectively. - Isolate virus nucleic acids (dsRNA, RNA and DNA), estimate their quantity by spectroscopy, determine their size and molecular weight through agarose gel electrophoresis. - Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation.
		(b) Biostatistics and Bioinformatics		<ul style="list-style-type: none"> - Learn how to use MS office and create, edit tables in MS word. - Develop knowledge to do simple statistics with Excel, to create statistical graphs and spread sheets in Excel for biological applications. - Use internet, web tools, databases, and search engines for designing, planning, and executing biological research experiments or investigations. - Analyze viral genome sequences using programs like Bio Edit and learn to use NCBI, EMBL for nucleic acid/protein analysis and phylogenetic tree construction. -
19	VR-306	(a) Biology of Viruses and their Management (OR)	2019	<ul style="list-style-type: none"> - Describe the discovery, isolation, propagation, and assay of viruses of bacteria and biology of bacteriophages of enterobacteria. - Understand the biology and properties of representative widely occurring phages, phages of cyanobacteria, mycoplasmas, mycoplasmas, archaea. - Learn about biology and properties of major viruses of fungi and yeast. - Acquire knowledge about biology and properties of major viruses of higher fungi, algae, and protozoa
		(b) Biology of Virus		<ul style="list-style-type: none"> - Understand the insect morphology and classification, types, structure of virus vectors, culturing, collection, preservation, and transportation of virus

		Vectors and their Management		<p>vectors and molecular approaches for identification of major arthropod virus vectors.</p> <ul style="list-style-type: none"> - Describe the biology, ecology, and life cycle of mosquitoes with reference to major mosquito-borne virus diseases and physical, chemical, biological, and other approaches for prevention and management of animal and human virus vectors in urban and rural settings. - List and discuss the important vectors transmitting plant viruses, their culturing, virus vector relationships, molecular mechanisms of vector transmission, effects of viruses on vectors. - Learn about biology, ecology and life cycle of nematodes and fungal vectors and demonstration of experimental nematode and fungal transmission of plant viruses, impact of climatic factors, soil vectors and cropping practices on epidemiology of vector-borne viruses, physical, chemical, biological, and other approaches for prevention and management of plant virus vectors and natural and transgenic vector resistant crops. <p>-</p>
20	VR-401	Animal and Human Virology	2019	<ul style="list-style-type: none"> - Understand the virus host interactions, host defense mechanisms against viruses and innate and adaptive immune responses to viruses, molecular mechanisms of viral pathogenesis with respect to polio, rotavirus, and cytomegalovirus. - Describe the various modes of vertical and horizontal transmission of animal and human viruses, zoonotic virus infections, mechanism of virus persistence, routes of entry and mechanism of virus spread in the body. - Learn about the epidemiological concepts of virus diseases, measures of disease occurrence, prevalence, and mapping, determinants of disease, factors affecting virus ecology and epidemiology of animal and human viruses. - Acquire knowledge on virus disease surveillance, strategies of virus

				<p>maintenance in communities, principles of virus disease survey, methods of prevention and control of animal and human viruses.</p>
21	VR-402	Animal and Human Virus Diseases	2019	<ul style="list-style-type: none"> - Learn the safety practices and To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (+) sense ssRNA viruses infecting animals and humans. - To describe the etiology, transmission, clinical manifestations, diagnosis, prevention and control of important (-) sense ssRNA viruses infecting animals and humans - To understand the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses infecting animals and human - To learn about the prion diseases, biology, prevention, and management of major viruses of silkworm, poultry, fish and prawn, emerging and reemerging virus diseases
22	VR-403	Animal and Human Virology & Virus Diseases	2019	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity, and ethical guidelines to be followed in the Molecular Virology laboratory. - Learn the technologies related to preparation of media for cell/tissue cultures, preparation of cell cultures/embryonated eggs for virus cultivation and isolation and quantitation of viruses using differential centrifugation and symptomatology/spectroscopy, respectively. - Develop skills to test the plant and human viruses using serological and molecular tests and kit-based methods. - Acquire knowledge on virus-based nanotechnology protocols, virus epidemiology by doing extension activities and visiting field, poultry, agriculture research station and aqua forms
23	VR-404	Project work related to Virology	2019	<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of plant, animal and human viruses and to isolate and quantitate viruses. - Learn the methods to detect plant and animal viruses and able to analyze various types of results obtained from serological and molecular viral

		(OR) (a) Applied Virology (OR)		<p>diagnostic methods.</p> <ul style="list-style-type: none"> - Apply the skills acquired to prepare NPV as biopesticides and virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits.
		(b)Tumor Biology and Viruses		<ul style="list-style-type: none"> - Acquire skills to detect carcinogens and mutagens using standard tests such as Ames test. - Distinguish transformed and normal cell lines and determine the anticancer property of biologically active compounds. - Design and execute PCR and other point of care methods using commercial kits for detection of tumor viruses (HCV, HIV, HPV). - Perform cultivation of poultry tumor viruses in cell cultures and acquiring the knowledge on histopathology of animal tumor viruses. -
24	VR-405	(a) Applied Virology (OR)	2019	<ul style="list-style-type: none"> - Understand the basic concepts, types, requirements and methodologies of plant/animal cell and tissue cultures used for cultivation of plant and animal viruses. - Learn the production of recombinant DNA technology-based antibodies and vaccines to viruses and the concepts and methods of production of virus resistant/tolerant crops and virus-based biopesticides. - :Acquire knowledge about common virus infections caused to human beings through vector and non-vector borne modes and basic principles of biosafety, biosecurity, and ethical/regulatory issues in Virology and basics in Intellectual Property Rights (IPR).

				<ul style="list-style-type: none"> - Understand the utilization of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology, phage display and therapy technologies and viruses as biological weapons.
		(b)Tumor Biology and Viruses		<ul style="list-style-type: none"> - Acquire knowledge about the basic aspects of tumors, distinguish normal and transformed cells and describe the role of oncogenes and tumor suppressor genes in causing cancers. - Understand the role and mechanism of carcinogens in inducing carcinogenesis and molecular viral mechanisms of transformation and tumorigenesis. - Describe the role of oncogenes, tumor suppressor genes, viral oncogenes, types, and mechanism of RNA viruses in inducing tumors. - List the DNA viruses causing tumors and learn their tissue transformation mechanisms, role of tumor suppressor genes in tumor suppression, immune mechanisms against tumors, immunotherapy, and physical and chemical therapeutic interventions against tumors.
25	VR-406	(a) Clinical Virology (OR)	2019	<ul style="list-style-type: none"> - Acquire basic understanding of virus properties, virus replication and learn methods of virus isolation and characterization of viruses using serological and molecular techniques. - Learn to collect, preserve the virus samples, and detect the viruses using biological, serological, and molecular methods, laboratory biosafety and quality control practices. - Understand the principles of epidemiology, disease occurrence patterns, disease surveillance and control strategies, concept, and methods of modern vaccines to viruses.

				<ul style="list-style-type: none"> - Learn about the approaches used for prevention and control of clinically important infectious caused by human viruses, unconventional slow viruses, and prions.
		(b) Emerging Infectious Viral Diseases		<ul style="list-style-type: none"> - Understand the evolution, biology, epidemiology, and emergence of infectious virus diseases, biology of emerging infectious diseases, zoonotic infections - Learn about the biology, clinical symptoms, epidemiology, diagnosis, and control of viruses causing AIDS and SARS and host defense mechanisms against infectious virus diseases. - Describe the biology, clinical symptoms, epidemiology, diagnosis, and control of vector borne emerging infectious viral diseases. - Acquire knowledge on impact of social and environmental change on emergence of viruses, vector control and antiviral therapies, vaccines, public health measures and bioterrorism.

44. Zoology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ZOO-101	Invertebrata & Chordata	2019	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and</p>

				<p>habitat.</p> <p>iii. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>
2	ZOO-102	Genetics & Evolution	2019	<p>i. Students will appreciate the concept of epigenetics as a key mechanism of regulation of gene expression steering development and cell fate that can ultimately be affected in disease condition</p> <p>ii. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2019	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in</p>

				<p>taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2019	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	ZOO-105	Metabolic Regulation & Cell Function	2019	<p>i. The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways</p>

				<p>associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	ZOO-106	Human Values and Professional Ethics-I	2019	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	ZOO-201	Cell Biology & Immunology	2019	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell</p>

				<p>types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	ZOO-202	Molecular Biology	2019	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students would gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares</p>

				students for further education employment in teaching, basic research or the health Professions.
9.	ZOO-203P	Practical-I Molecular Biology and Cell Biology	2019	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	ZOO-204P	Practical-II Comparative Animal Physiology and Immunology	2019	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's</p>

				triggered and regulated.
11	ZOO-205	Comparative Animal Physiology	2019	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	ZOO-206	Human Values and Professional Ethics-II	2019	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	ZOO-301	Developmental Biology	2019	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and</p>

				<p>structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	ZOO-302	Environmental Biology	2019	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	ZOO-303P	Developmental Biology and Tools & Techniques	2019	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be</p>

				<p>analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	ZOO-304P	Environmental Biology and Enzymology	2019	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p>

				<ul style="list-style-type: none"> iii. Students learn about enzymes. Their classification and nomenclature iv. Students learn about specificity of enzymes v. Students learn about measurement of enzymatic activity vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.
17	ZOO-305A	Tools & Techniques	2019	<ul style="list-style-type: none"> i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances. ii. Identify and describe the different equipment and tools used in a biology laboratory. iii. Correctly operate different laboratory instruments. iv. Correctly operate different types of microscopes. v. Prepare tissue for section cutting and correctly operate a microtome.
18	ZOO-305B	Enzymology	2019	<ul style="list-style-type: none"> i. Students gain knowledge about regulation of enzyme activity with respective mechanisms ii. To understand about mechanism of enzymes in clinical diagnosis and their applications iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.
19	ZOO-305C	Bioinformatics & Biostatistics	2019	<ul style="list-style-type: none"> i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology. ii. Describe different methods of data handling using computer. iii. Perform basic operations of gene sequence

				<p>retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	ZOO-306A	Economic Zoology	2019	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	ZOO-306B	Structural Biology	2019	<p>i. Understand the evolution of protein structural motifs and domains and associate this with</p>

				<p>function;</p> <p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
22	ZOO-306C	Human Health and Infectious diseases	2019	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>
23	ZOO-401	Neurobiology	2019	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p> <p>ii. Students leant and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	ZOO-402	Toxicology	2019	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of</p>

				<p>toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
25	ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2019	<p>i. Learnt about structure, function and organization of Neurons in the Central nervous system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effective communicate with both specialist and non-specialist audiences/community.</p>
26	ZOO-404P	Toxicology and Animal Behavior & Wild	2019	<p>i. Skill development in environmental and</p>

		life		<p>occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
27	ZOO-405A	Animal Biotechnology & Microbiology	2019	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the</p>

				<p>defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
28	ZOO-405B	Animal Behavior & Wild life	2019	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
29	ZOO-405C	Endocrinology	2019	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	ZOO-406A	Genetic Engineering	2019	<p>i. This course exposes students to the applications</p>

				<p>of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
31	ZOO-406B	Environmental Impact Assessment & Green Auditing	2019	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
32	ZOO-406C	Medical Biotechnology, IPR, Biostatistics and Bioethics	2019	<p>i. Students will gain awareness about Intellectual Property Rights (IPR) to take measures for protecting their ideas.</p> <p>ii. Gains knowledge on the Developmental stages of organism in Animal Biotechnology.</p> <p>iii. To understand and they will be able to devise business strategies by taking account of IPRs.</p> <p>iv. Students will develop awareness about bioethics and biosafety, Authorship and patenting / commercial rights and conflicts.</p>

Animal Biotechnology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/Skill Development
1	ABT- Core-101	Metabolic Regulation & Cell Function (MRCF)	2019	<ul style="list-style-type: none"> • Knowledge on chemical bonds, thermodynamics principles and metabolisms of Glycolysis, TCA Cycle and their biomedical importance will be gained. • Metabolic disorders of urea cycle and importance of proteins structure and functions can be understood. • Biosynthesis of purine and pyrimidine nucleotide and Clinical disorders of purine and pyrimidine metabolism can be learnt • To become proficient in Biomedical importance of lipids and over view metabolism of carbohydrate, protein and lipids
2	ABT- Core-102	Tools & Techniques (TT)	2019	<ul style="list-style-type: none"> • Skills will be acquired on chromatography, centrifugation, electrophoresis and blotting techniques • To get knowledge on cell and tissue culture, cell types, culture media and overview of stem cell biology • To acquire skill on electrogenic spectrum, type of detectors, electrophysiological methods and brain activity recording techniques • Microscopic techniques, different fixation and staining techniques, tissue processing for microtomy, cryotechniques will be learnt

3	ABT-Core-P-103	Metabolic Regulation & Cell Function	2019	<ul style="list-style-type: none"> • Practical knowledge will be gained on biochemical assays like estimation of proteins, structural proteins, soluble proteins, free amino acids, total carbohydrates and total cholesterol. • To gain knowledge in handling equipments like cooling centrifuge, autoclave, laminar air flow etc., and, maintenance of animal cell culture laboratory. <p>To learn microbial media preparation for their culture and identification</p>
4	ABT-Core-P-104	Tools & Techniques	2019	<ul style="list-style-type: none"> • Isolation of DNA from chick liver • Agarose gel electrophoresis • Estimation of DNA and RNA by diphenyl aniline method and orcinol method • Paper chromatography • Plating procedures • Gram staining • Anti microbial susceptibilities test
5	ABT-CF-105	Microbiology and Diseases	2019	<ul style="list-style-type: none"> • Microorganisms classification and structure of prokaryotic and eukaryotic microorganism can be understood • To get knowledge on Nutritional requirements to microorganisms, growth of microorganism, control of microorganism and microbes of biotechnological importance • To become proficient in chemical nature of gene, plasmids incompatibility, horizontal transfer of genome among the microbial community and Benzer's classical studied on II locus • To learn diseases caused by microorganism

6	ABT -EF-106	Human Values & Professional Ethics (HVPE)-I	2019	<ul style="list-style-type: none"> • Knowledge will be gained on nature of ethics its relation to religion. Politics, Business • To understand nature of values Good and Bad, end and means, analysis of basic moral concepts, good behavior and respect for elders, character and conduct • Proficient on hagavad Githa • Crime and theories of punishment will be learnt
7	ABT- Core-201	Molecular Biology (MB)	2019	<ul style="list-style-type: none"> • To gain knowledge on DNA structure, genome of Nuclear and mitochondrial and maternal Inheritance • To understand replication in prokaryotes, Enzymology of DNA replication, Discontinuous replication and Bidirectional replication • Synthesis of RNA, Types of RNA, Genetic code and Ribosome structure will be understood <p>Knowledge will be gained regulation I and II and Operon concepts</p>
8	ABT- Core-202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2019	<ul style="list-style-type: none"> • To understand animal cell culture, biology of stemcells and embryonic stem cell • To learn propagation of embryonic stem cells, nuclear transfer technology, animal cloning and stem cell differentiation • To gain knowledge on stem cell plasticity, stem cell assay and protocols, stem cell separations and stem cell therapies <p>To learn stem cells and tissue engineering, human embryonic stem cells and society, intellectual property results</p>

9	ABT-Core-P-203	Molecular Biology & Immunology	2019	<ul style="list-style-type: none"> • Effect of UV radiation on bacterial growth • SDS PAGE • Electrophoresis • Blood grouping • Blood smear preparation • RBC count • Radial Immuno Diffusion • Neubauer chaber
10	ABT-Core-P-204	Animal Cell culture & Stem Cell Biology & Cell Biology	2019	<ul style="list-style-type: none"> • Laboratory safety rules and regulations • Animal handling and care • Preparation of cell culture media • Staining of animal cells • Preparation of cell lines • Culture of virus in chick embryo
11	ABT- CF-205	Cell Biology & Immunology (CB&IM)	2019	<ul style="list-style-type: none"> • Able to learn organization of prokaryotic and eukaryotic cell, Nucleus structure, Eukaryotic chromosome and polytene and lamp brush chromosomes • To learn mechanism of cell division, regulation of eukaryotic cellcycle, chromosomal abnormalities and tumor biology • To understand types of immunity, types of cell involved in immune response, structure and function of antibody and complimentarily cascade • To gain knowledge on Antigen presentation, hypersensitivity reactions, immune tolerance and immunopathology
12	ABT- EF-206	Human Values & Professional Ethics (HVPE)-II	2019	<ul style="list-style-type: none"> • To gain knowledge on value education • To learn medical ethics

				<ul style="list-style-type: none"> • To become proficient on business ethics • To understand environmental ethics and social ethics
13	ABT- Core-301	Enzymology (ENZ)	2019	<ul style="list-style-type: none"> • To understand enzyme specificity, enzyme catalysis and isolation and purification of enzymes • To gain knowledge on theories of enzymes kinetics, enzyme kinetics and its importance, effect of reactant concentrations and effect of temperature of pH and enzyme concentration reaction rate • To become proficient on clinical aspects of enzymology, immobilized enzymes, isoenzymes and enzyme engineering
14	ABT- Core-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2019	<ul style="list-style-type: none"> • To become proficient on structure and function of male and female reproductive system; reproductive cycles and contraception in male and females • To gain skill on sex determination, selection for qualitative inherited characters, parental determination and verification and progeny testing • To understand artificial insemination techniques, in vitro fertilization, embryo transfer technology, microinjection and macroinjection • To learn transgenic technology development, generation of chimeric, transgenic and knockout mice
15	ABT-Core-P-303	Enzymology & Genetic Engineering	2019	<ul style="list-style-type: none"> • To determine the effect of substrate concentration, enzyme concentration and temperature on enzyme activity • Measures of central tendency • regression and correlation analysis • T-test
16	ABT-Core-	Animal Reproduction, Breeding &	2019	<ul style="list-style-type: none"> • To estimate the sperm motility, sperm count

	P-304	Transgenic Technology & Environmental Biotechnology		<p>, sperm membrane integrity test and pH of semen.</p> <ul style="list-style-type: none"> • Determination sperm viability • Retrieval of gene and protein sequence from gene and protein bank, redelivery
17	GE-305A	Cancer Biology	2019	<ul style="list-style-type: none"> • To gain knowledge on cancer types and tumor development • To learn oncogenes, mechanisms of onogene activation and chromosomal translocation • To understand cell cycle regulation and cancer, DNA Damage and repair • To learn tumor immunology, Vaccine development, tumor cell evasion of immune defenses
18	GE-305B	Animal Biotechnology & Industrial Applications	2019	<ul style="list-style-type: none"> • To gain knowledge on preservation animals engineered bacteria/yeast/ cell lines, metabolic engineering, fermentative production and glycolytic pathway • To understand monoclonal antibodies production and genetically engineered products • To know the DBT guidelines, Global scenario of transgenic micro organisms and ethical issues related to biotechnology products
19	GE-305C	Biostatistics & Bioinformatics	2019	<ul style="list-style-type: none"> • To understand prediction of protein structure and protein sequence database, prediction of gene structure, submission of sequence to database, phylogenetic analysis • To learn biostatistics, measures of location and dispersion, curve fitting and correlation and regression

				<ul style="list-style-type: none"> To understand probability distribution, tests of significance, student t-test and F-test, chi square test and their application
20	OE-306A	Environmental Biotechnology (EBT)	2019	<ul style="list-style-type: none"> To gain knowledge on waste and pollutants, hazards from wastes and pollutants and hazards from chemicals in wastes Waste treatment, treatment of liquid wastes, treatment of solid waste and contributions of biotechnology to waste treatment will be understood To become proficient in aerobic waste water treatment and measurement of pollution levels To learn anaerobic treatment of waste water, biodegradation of xenobiotics compounds, hazards from xenobiotics and bioremediation
21	OE-306B	Genetic Engineering (GE)	2019	<ul style="list-style-type: none"> Use of enzymes in DNA and RNA synthesis, restriction enzymes and ligation and modification of DNA To learn vectors for constructions of genomic libraries, expression vectors, promoters and vectors used for cloning To gain knowledge on DNA fragments, cDNA synthesis, PCR To become proficient on ligation between cohesive and blunt end DNA fragments, introduction of cloned genes into host and expression of cloned genes
22	ABT-Core- 401	Medical Biotechnology (MBT)	2019	<ul style="list-style-type: none"> To understand disease diagnosis, use of monoclonal antibodies in detection of genetic disease To learn Disease treatment, interferons, growth factor, and antisense nucleotide as

				<p>therapeutic agent</p> <ul style="list-style-type: none"> To gain knowledge on gene therapy, types of gene therapy, augmentation therapy and targeted transfer To become proficient on forensic medicine, preparation of DNA sample. Approaches for DNA analysis and applications of forensic medicine
23	ABT-Core- 402	Fermentation Technology and Downstreaming Process (FTDSP)	2019	<ul style="list-style-type: none"> To understand cell distribution methods, separation techniques, purification by chromatographic techniques and isolation and screening and maintenance of industrially importance microbes To learn bioreactor design, fermentation economics, upstream processing, membrane based separations <p>To gain knowledge on importance of downstream processing economics of downstream processing</p>
24	ABT-Core-P-403& 404	Project and Viva- Voce	2019	<ul style="list-style-type: none"> Students must perform project work which includes experiments related to Toxicology, Animal Tissue culture, Fermentation technology or any work related to biology. <p>After completion of project work students have to prepare dissertation by their own and submit to the committee members.</p> <ul style="list-style-type: none"> Evaluation of dissertation will be conducted by committee members through Viva-Voce
25	GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2019	<ul style="list-style-type: none"> To understand socio-economic and legal impact of biotechnology, use of genetically modified organisms, moral and ethical issues in

				<p>biotechnology and safety issues with GMO</p> <ul style="list-style-type: none"> • To learn intellectual property right, evaluation of patenting, application of GATT and IPR and WTO Act and global and Indian biodiversity • To gain knowledge on Indian Patent Act 1970, role of country patent office, U.S. Patent trademark office and U.S. Paten system Vs Indian Patent system • To gain knowledge on Ethics and genetic engineering, patent of genes, human cloning, stem cel, regulatory requirements for drugs and biologics, GLP and GMP
26	GE-405B	Drug design and Development	2019	<ul style="list-style-type: none"> • To learn drug design, analog approach of drug designing • To understand SAR Vs QSAR, Partition coefficient, Hammets substituent constant and Tafts steric constant, Free Wilson mode, 3D-QSAR approach like COMFA and COMIA • To gain knowledge on pharmacological screening and assays, pharmacological screening models for therapeutic areas, cell based assay, biochemical assay, radiological binding assay, small molecule manufacturing • To learn Drug Laws, FDA, OECD, ICH, Schedule Y, drug registration, Regulations of human pharmaceuticals and biological products, and clinical trial design
27	GE-405C	Animal Cell Culture Techniques	2019	<ul style="list-style-type: none"> • To understand Animal cell culture, culture

				<p>medium, characteristics of cell in culture, measurement of viability and cytotoxicity , cell types and apoptosis</p> <ul style="list-style-type: none"> • To gain knowledge in scaling up of animal cell culture, cell transformation, tissue engineering, transgenic animals, animal cloning • To become proficient in improvement of biomass, pharming products, plasminogen activator and ethical issues related to biotechnology products
28	OE-406A	Advanced Genomics and Proteomics	2019	<ul style="list-style-type: none"> • To learn structure of Prokaryotic and Eukaryotic genomes, Isolation and purification of genomic DNA, Construction of Physical maps and Whole genome sequence alignment • To understand genome annotation, methods for gene identification, functional genomics, transcript profiling • To learn protein structure, sample preparation and separation 2D-analysis, Multidimensional liquid chromatography, protein-protein interactions analysis <p>To gain knowledge on DNA /protein sequence homologies, Gene duplication and</p>
29	OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2019	<ul style="list-style-type: none"> • To understand Types of honey bees, life history of honey bees, management of apiculture and by products of honey bees and economic importance disease and their control • To become proficient on fresh water fin fish culture, shell fish (prawn and Pearls) culture

				<ul style="list-style-type: none"> To understand historical background of vermicompost, methods of vermiculture and problems involved in vermicompost
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44. Business Management

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MBA 101	Management And Organisational Behaviour	2019	<p>Examine the Management concepts and functions.</p> <p>Apply the concepts of planning, decision making.</p> <p>Apply the concepts of delegation of authority, decentralisation and departmentation in real life situations.</p> <p>Analyse the controlling principles and practices, Ethics and corporate social responsibility.</p> <p>Evaluate the basic concepts of organizational conflicts and climate.</p>	
2	MBA 102	Managerial Communications	2019	<p>Apply the basic concepts of communication for business correspondence.</p> <p>Distinguish different forms of communication.</p> <p>Evaluate different types of communication.</p> <p>Adapt report writing skills of different types on need basis.</p> <p>Acquire presentation skills along with the interview techniques.</p>	
3	MBA 103	Managerial Economics	2019	<p>Describe the importance of managerial economics and its contribution to decision making in different types of business organizations by the managerial economist.</p>	

				<p>Apply the basic principles of managerial economics.</p> <p>Apply demand analysis concept in the real life business situations.</p> <p>Discuss the meaning and usefulness of the production function and cost function in analysing the firm's production activity.</p>	
4	MBA 104	Accounting For Managers	2019	<p>Outline the basic knowledge of accounting, bookkeeping, accounting Principles, accounting cycle.</p> <p>Apply the concepts of journal, ledger and Trail balance.</p> <p>Identify the nature of expenditure and revenue for preparation of financial statements of business.</p> <p>Examine the role of accounting policies like depreciation.</p>	
5	MBA 105	Quantitative Analysis For Management Decisions	2019	<p>Recall the fundamentals in Mathematics and Statistics.</p> <p>Demonstrate the methods to solve derivatives, progressions and gaming.</p> <p>Choose decision making in a competitive situation.</p> <p>Solve transportation Problem with minimum cost of transport of commodities.</p>	
6	MBA 106	Information Technology For Managerial Applications	2019	<p>Identify various network topologies.</p> <p>Apply Various Mathematical & Statistical Operations Using MS office &MS-Excel.</p> <p>Create Effective basic power point Presentations</p>	
7	MBA 107	Business Statistics	2019	<p>About the information needs, sources of data and measures of central tendency .</p>	

				The concept of Scientific Research and the methods of conducting Scientific Enquiry. The Statistical Tools of Data Analysis.	
8	MBA 108	Human Values And Professional Ethics	2019	About ethics, values and morals. The concepts of value based education and its relevance. Learn about environmental and social ethics	
9	MBA 201	Marketing Management	2019	Outline the concepts of marketing. Create the segmentation, targeting and positioning in marketing. Analyse various phases of product life cycle. Evaluate various methods of pricing and identify the best pricing strategy. Evaluate marketing communication strategies.	
10	MBA 202	Financial Management	2019	Outline the basic concepts of Financial Management. Comprehend the various methods of Investment Analysis and apply various techniques of capital budgeting. Adapt the concepts of leverage, capital structure and its effect on the long term survival of the firm. Appraise various methods of computation of cost of capital.	
11	MBA 203	Human Resources Management	2019	Outline the functions and challenges of HRM. Apply different concepts of HR Planning, Recruitment, Selection, Training, Interviewing Techniques and Executive Development Programs. :Apply the uses of job analysis, job description, job specification, ergonomics in industry and the methods of job evaluation. Utilize the various methods of performance	

				appraisal.	
12	MBA 204	Production Management	2019	Apply the basic concepts of production and operations management and identify types of manufacturing processes. Define and explain concept of production planning and control. Identify effective plant location and plant layout. Design strategies to improve productivity.	
13	MBA 205	Business Research Methods	2019	Adapt the fundamentals of Business research methodology. Identify research problem. Apply sample and census survey and measuring techniques. Design data collection techniques. Develop data processing procedures and apply tools. Draft thesis/report writing.	
14	MBA 206	Management Information Systems	2019	Understand various types of information systems. Analyse the various functional information systems	
15	MBA 207	Operation Research	2019	Understand various concepts and techniques of OR. Apply various OR techniques to improve the efficiency of the organisations.	
16	MBA 208	Leadership Values	2019	Identify the leadership qualities to run an organization successfully. Appraise the various concepts of value based leadership.	
17	MBA 301	Business Environment	2019	Outline the basic concepts of business environment and its components. Analyze the structure of Indian economy.	

				Discuss the components of fiscal policy and balance of payments. Evaluate different trade related policies.	
19	MBA 302	Entrepreneurship	2019	Understand the concept of entrepreneurship. Analyse entrepreneurship development programs in India and contents for training for entrepreneurial competencies. Develop Creativity in entrepreneurship. Design the project reports & make project evaluation	
20	MBA 311	Consumer Behaviour	2019	Evaluate the consumer behaviour and business strategies. Apply the various consumer behaviour models. Build the psychological process and develop the effective strategy in terms of impact on consumer behaviour.	
21	MBA 312	Customer Relationship Management	2019	Develop the concepts of CRM and strategies in business. Appraise the customer profile and perception of customer behavior in relationship perspectives. Analyse strategies for customer acquisition, models of CRM.	
22	MBA 313	Marketing Research And Information Systems	2019	Understand basic concepts of research and methodology of conducting researches in marketing domain. <ul style="list-style-type: none"> • Pursue the summer training/ project work and a winter project work and a professional career in Marketing Research domain. 	
23	MBA 314	Advertising And Sales Promotion Management	2019	Discuss the basic concepts of advertising for better understanding the challenges and opportunities in advertising . Analyse the relations of advertising with	

				<p>segmentation and budget decision .</p> <p>Design better advertising strategies for the company .</p> <p>Identify media options which are suitable for the company for better promotion .</p> <p>Develop an effective advertising campaign for the company .</p>	
24	MBA 315	Product And Brand Management	2019	<p>Discuss the importance of brand image in marketing .</p> <p>Formulate brand vision which communicates better the organisations' policy on Branding .</p> <p>Analyse brand promotion methods in brand communication .</p> <p>Analyse factors influencing brand extension decisions .</p> <p>Design brand marketing programmes and for better brand performance .</p>	
25	MBA 316	Digital Marketing	2019	<p>Get knowledge regarding basic concepts of Digital Marketing.</p> <p>Analyse and Choose different channels of digital marketing according to the changing requirements of the markets</p> <p>Construct different digital marketing plans on situational basis.</p> <p>Manage digital by conducting a marketing research and adapt the changes by creating new goals for further reputation.</p>	
26	MBA 321	Financial Services	2019	<p>Have awareness on insurance industry & its regulations.</p> <p>Create awareness on different financial services.</p>	
27	MBA 322	Investment Management	2019	<p>Analyse various investment alternatives for effective investment decision .</p> <p>Discuss the importance of security analysis in</p>	

				<p>investment decision process .</p> <p>Design bond management strategies to realise good return on bond investment .</p> <p>Apply different equity valuation methods for the valuation of securities .</p> <p>Construct optimal portfolio for higher return at lower risk .</p> <p>Analyse different schemes of mutual funds for better investment decision .</p>	
28	MBA 323	Business Taxation	2019	<p>Conclude the fundamentals of Taxation .</p> <p>Discuss taxation methods of companies and individuals .</p> <p>Analyse income sources from business through taxation .</p> <p>Evaluate Tax management strategies</p>	
29	MBA 402	Strategic Management	2019	<p>Develop vision, mission and objectives of the organization.</p> <p>Analyse industry and develop techniques of competitive analysis.</p> <p>Appraise strategic leadership styles and actions.</p> <p>Formulate effective strategies in business.</p> <p>Develop a frame work for the implementation strategies in business.</p> <p>Evaluate the strategy controls by measuring performance of organization.</p>	
30	MBA 403	Business Laws And Ethics	2019	<p>Analyze the Indian Contract Act.</p> <p>Evaluate Sales of Goods Act and the machinery for redressal of consumer grievances.</p> <p>Elaborate rights and duties of agent and principal, Principal's liability for the acts of agent and the procedure for termination of agency.</p>	

				Examine the rights and duties of partners, dissolution of partnership firm.	
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46. Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MCA 101	Discrete Mathematical Structures	2019	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution
2	MCA 102	Object Oriented Programming with Java	2019	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
3	MCA 103	Computer Organization	2019	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors.

				<ol style="list-style-type: none"> 2. To study the hierarchical memory system including cache memories and virtual memory.
4	MCA 104	Operating Systems	2019	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
5	MCA 105	105A.Accounting and Financial management 105B.Accounting Essentials for Computer Applications	2019	<ol style="list-style-type: none"> 1. Use of Accounting information to managers with in the organization. 2. Informs the business decision & control the Management Functions.
6.	MCA 106 P	Software Lab I (based on 101 & 103)	2019	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution. 4. To gain knowledge about the Micro Processors. 5. To study the hierarchical memory system including cache memories and virtual memory
7.	MCA 107 P	Object Oriented Programming Lab	2019	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts

				effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
8.	MCA 108P	Operating Systems Lab	2019	1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
9.	MCA 201	Computer Oriented Operations Research	2019	1. solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. analyse the general nonlinear programming problems. 4. formulate the nonlinear programming models.
10.	MCA 202	Data Structures using Java	2019	1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
11	MCA 203	Data Communication and Computer Networks	2019	1. Understand the Network Terminologies and the components used to build networks. 2. Understand Network Models (Topologies) to establish networked systems.

				<ol style="list-style-type: none"> 3. Understand the internal architecture, working procedure of OSI Layer and Protocols.
12	MCA 204	Advanced Database Management Systems	2019	<ol style="list-style-type: none"> 1. Students will get an attempt to provide with the advanced information about ADBMS and their development. 2. This Subject also provides the conceptual background necessary to design and develop distributed database System for real life applications and also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms. 3. How SQL Programs are implemented as a series of primitive operations and how DDBs are implemented and how applications are design for those DDB
13	MCA 205	205A. E-Commerce	2019	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of management information systems. 2. Have the knowledge of the different types of management information systems. 3. Understand the processes of developing and implementing information systems and be aware of the ethical, social, and security issues of information systems;
14		205B. Cyber Security	2019	<ol style="list-style-type: none"> 1. Analyze and evaluate the cyber security needs of an organization and determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. 2. Measure the performance and troubleshoot cyber security systems and

				<p>implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools.</p> <p>3. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators, Design and develop a security architecture for an organization and design operational and strategic cyber security strategies and policies.</p>
15		205C. Neural Networks	2019	<p>1. Define what is Neural Network and model a Neuron and Express both Artificial Intelligence and Neural Network.</p> <p>2. Analyze ANN learning, Error correction learning, Memory-based learning, Hebbian learning, Competitive learning and Boltzmann learning.</p> <p>3. Implement Simple perception, Perception learning algorithm, Modified Perception learning algorithm, and Adaptive linear combiner, Continuous perception, learning in continuous perception.</p>
16	MCA 301	Software Engineering	2019	<p>1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC.</p> <p>2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation,</p>

				<p>and testing of software systems that meet specification, performance, maintenance and quality requirements.</p> <p>3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse</p>
17	MCA 302	Computer Graphics	2019	<p>1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics.</p> <p>2. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis and Use of geometric transformations on graphics objects and their application in composite form.</p> <p>3. Extract scene with different clipping methods and its transformation to graphics display device, Explore projections and visible surface detection techniques for display of 3D scene on 2D screen and Render projected objects to naturalize the scene in 2D view and use of illumination models for this.</p>
18	MCA 303	Web Technologies	2019	<p>1. Explain the history of the internet and related internet concepts that are vital in understanding web development.</p> <p>2. Discuss the insights of internet programming and implement complete application over the web and students can Demonstrate the important HTML tags</p>

				<p>for designing static pages and separate design from content using Cascading Style sheet.</p> <p>3. Utilize the concepts of JavaScript and Java, Use web application development software tools i.e. Ajax, PHP and XML etc. and identify the environments currently available on the market to design web sites.</p>
19	MCA 304	304A.Data warehousing and Data mining	2019	<ol style="list-style-type: none"> 1. To identify the scope and essentiality of Data Warehousing and Mining and to analyze data, choose relevant models and algorithms for respective applications. 2. To study spatial and web data mining. 3. Students develop research interest towards advances in data mining.
20		304B.Big Data Analytics	2019	<ol style="list-style-type: none"> 1. Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. 2. Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. 3. Students Interpret business models and scientific computing paradigms, and apply software tools for big data analytics and achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications
21		304C System Programming	2019	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers,

				<p>interpreters, compilers, operating systems).</p> <ol style="list-style-type: none"> 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming.
22	MCA 305	305A. Cryptography and Network Security	2019	<ol style="list-style-type: none"> 1. Provide security of the data over the network and do research in the emerging areas of cryptography and network security. 2. Implement various networking protocols. 3. Protect any network from the threats in the world
23		305B. Artificial Intelligence	2019	<ol style="list-style-type: none"> 1. Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. 2. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. 3. Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool,

				Demonstrate proficiency in applying scientific method to models of machine learning and Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.
24		305C.Mobile Application Development	2019	<ol style="list-style-type: none"> 1. Identify various concepts of mobile programming that make it unique from programming for other platforms, Critique mobile applications on their design pros and cons. 2. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 3. Program mobile applications for the Android operating system that use basic and advanced phone features, and deploy applications to the Android marketplace for distribution.
25	MCA 401	401A.Cloud Computing	2019	<ol style="list-style-type: none"> 1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. 2. Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient. 3. Discuss system, network and storage virtualization and outline their role in

				<p>enabling the cloud computing system model.</p> <p>4. Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.</p>
26		401B. Dot Net Technologies	2019	<ol style="list-style-type: none"> 1. To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. 2. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but webdistributed, or executed remotely. 3. Make the developer experience consistent across widely varying types of apps, such as Windowsbased apps and Web-based apps.
27		401C. Software Testing	2019	<ol style="list-style-type: none"> 1. List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects. 2. Distinguish characteristics of structural testing methods and demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. 3. Discuss about the functional and system testing methods and demonstrate various issues for object oriented testing.
28	MCA 402	402A. Essentials of Data Science	2019	<ol style="list-style-type: none"> 1. Having a clear understanding of the subject related concepts and

				<p>contemporary issues.</p> <ol style="list-style-type: none"> 2. Having problem-solving ability- to assess social issues and engineering problems. 3. Having a clear understanding of professional and ethical responsibility. 4. Having cross-cultural competency exhibited by working as a member or in teams. And having a good working knowledge of communicating in English – communication with the engineering community and society
29		402B.Deep Learning	2019	<ol style="list-style-type: none"> 1. Understand the role of deep learning in machine learning applications and get familiar with the use of TensorFlow/Keras in deep learning applications. 2. Compare Various deep learning Algorithms used for Classification Segmentation and detection. 3. Apply various concepts related with Deep Learning to solve Problems. Analyse different deep learning models in Image related projects.
30		402C.Internet of Things	2019	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
31	MCA 403	Major Project Work	2019	

M.Sc (CS) : Master of Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MSCS -101C	Computer Organization	2019	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
2	MSCS -102C	Programming in Java & Data Structures	2019	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
3	MSCS -103C	Operating Systems	2019	<ol style="list-style-type: none"> 1. Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,. 2. Analyze important algorithms eg. Process scheduling and memory management algorithms. 3. Categorize the operating system's resource management techniques, dead lock management techniques, memory management techniques. 4. Demonstrate the ability to perform OS tasks in Red Hat Linux Enterprise.
4	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2019	<ol style="list-style-type: none"> 1. Ability to apply mathematical logic to solve problems. 2. Understand sets, relations, functions, and

				<p>discrete structures.</p> <ol style="list-style-type: none"> 3. Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. 4. Able to formulate problems and solve recurrence relations. 5. Able to model and solve real-world problems using graphs and trees.
5	MSCS – 104 GE - B	Computer Oriented Operational Research	2019	<ol style="list-style-type: none"> 1. Solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. Formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. Analyse the general nonlinear programming problems. 4. Formulate the nonlinear programming models.
6	MSCS - 05CF	Environmental Studies	2019	<ol style="list-style-type: none"> 1. Articulate the interconnected and interdisciplinary nature of environmental studies. 2. Demonstrate an integrative approach to environmental issues with a focus on sustainability. 3. Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem solving. 4. Communicate complex environmental

				<p>information to both technical and non-technical audiences.</p> <p>5. Understand and evaluate the global scale of environmental problems and reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.</p>
7	MSCS - 106EF	1. A. PC Hardware Basics	2019	<p>2. Identify the hardware components of a computer. Lists the hardware components such as processor, memory, disk, main board, etc.</p> <p>3. Explains the features of the hardware components of a computer. Explains the relationships between the components of a computer and how data are transferred among the components.</p> <p>4. identify the peripheral devices outside computer. Uses computer using input devices, such as keyboard and mouse.</p> <p>5. Transfers data outside the computer using output devices, such as screen and printer. Saves files to removable devices and loads files from removable devices.</p> <p>6. Connects to the Internet using network cards. identify the software's running on a computer. Identifies BIOS and changes settings in BIOS.</p>
8	MSCS - 106EF	B. Statistical Methods	2019	<p>1. Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data.</p> <p>2. Employee the principles of linear</p>

				<p>regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient.</p> <ol style="list-style-type: none"> 3. Know the association between the attributes. Know the construction of point and interval estimators. 4. Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation.
9	MSCS -201C	Advanced Data Base Management System	2019	<ol style="list-style-type: none"> 1. Explain and evaluate the fundamental theories for advanced database architectures and query operators. 2. Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database. 3. Assess and apply database functions of distributed database. Evaluate different database designs and architecture. 4. Administer and analyze database with query optimization techniques and develop Web interface with database. 5. Understand advanced querying and decision support system.
10	MSCS -202C	Computer Networks	2019	<ol style="list-style-type: none"> 1. Describe the general principles of data communication. Describe how computer networks are organized with the concept of layered approach. 2. Describe how signals are used to transfer data between nodes. Implement a simple LAN with hubs, bridges and switches. 3. Describe how packets in the Internet are

				<p>delivered. Analyze the contents in a given data link layer packet, based on the layer concept.</p> <ol style="list-style-type: none"> Design logical sub-address blocks with a given address block. Decide routing entries given a simple example of network topology. Describe what classless addressing scheme and how routing protocols work.
11	MSCS -203C	Computer Graphics	2019	<ol style="list-style-type: none"> The course introduces the basic concepts of computer graphics. It provides the necessary theoretical background and demonstrates the application of computer science to graphics. The course further allows students to develop programming skills in computer graphics through programming assignments. Understands the core concepts and mathematical foundations of computer graphics knows fundamental computer graphics algorithms and data structures. Has an overview of different modeling approaches and methods and has detailed knowledge about basic shading and texture mapping techniques. Understands light interaction with 3D scenes.
12	MSCS- 204 GE – A	E- Commerce	2019	<ol style="list-style-type: none"> Understand the basic concepts and technologies used in the field of management information systems. Have the knowledge of the different types of management information systems. Understand the processes of developing

				<p>and implementing information systems.</p> <p>3. Be aware of the ethical, social, and security issues of information systems;</p>
13	MSCS- 204 GE B	Accounting And Financial Management	2019	<p>1. Use of Accounting information to managers within the organization.</p> <p>2. Informs the business decision & control the Management Functions.</p>
14	MSCS- 205CF	Human Rights And Value Education	2019	<p>1. understand the historical growth of the idea of human rights.</p> <p>2. demonstrate an awareness of the international context of human rights.</p> <p>3. demonstrate an awareness of the position of human rights in the UK prior to 1998.</p> <p>4. understand the importance of the Human Rights Act 1998, analyse and evaluate concepts and ideas.</p>
15	MSCS- 206 EF A	Principles Of Management	2019	<p>1. Understand the concepts related to Business.</p> <p>2. Demonstrate the roles, skills and functions of management.</p> <p>3. Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.</p> <p>4. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.</p>
16	MSCS- 206 EF B	Internet Of Things	2019	<p>1. Able to understand the application areas of IOT.</p> <p>2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.</p>

				<ol style="list-style-type: none"> 3. Able to understand building blocks of Internet of Things and characteristics.
17	MSCS-301C	Data Warehousing and Data Mining	2019	<ol style="list-style-type: none"> 1. Understand the functionality of the various data mining and data warehousing component. 2. Appreciate the strengths and limitations of various data mining and data warehousing models. 3. Explain the analyzing techniques of various data. 4. Describe different methodologies used in data mining and data ware housing. 5. Compare different approaches of data ware housing and data mining with various technologies.
18	MSCS-302C	Web Technologies	2019	<ol style="list-style-type: none"> 1. Analyze a web page and identify its elements and attributes. 2. Create web pages using XHTML and Cascading Style Sheets. 3. Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas. 4. Build interactive web applications using AJAX.
19	MSCS-303C	Software Engineering	2019	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation,

				<p>and testing of software systems that meet specification, performance, maintenance and quality requirements.</p> <p>3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse</p>
20	MSCS -304-GE-A	Systems Programming	2019	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming. 4. Ability to devise, select, and use modern techniques and tools needed for the design and implementation of system programs.
21	MSCS -304-GE-B	Computer Algorithms	2019	<ol style="list-style-type: none"> 1. Apply design principles and concepts to algorithm design (c) 2. Have the mathematical foundation in analysis of algorithms (a, j) 3. Understand different algorithmic design strategies (j)

				4. Analyze the efficiency of algorithms using time and space complexity theory (b)
22	MSCS -304-GE-C	UID Using .Net Technologies	2019	<ol style="list-style-type: none"> 1. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed, or executed remotely. 2. Build all communication on industry standards to ensure that code based on .NET Framework integrates with any other code. 3. Building multi-tier enterprise applications. 4. Client-side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.
23	MSCS -304-GE-D	IT in Forensic Science	2019	<ol style="list-style-type: none"> 1. Approach analysis of evidence without bias. 2. Develop a conceptual understanding of criminal justice system, rules of evidence, legal system. 3. develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation and scientific laboratory procedures can be applied to immediate employment or advanced study.
24	MSCS -304-GE-E	Software Testing	2019	<ol style="list-style-type: none"> 1. Various test processes and continuous quality improvement, Types of errors and fault models. 2. Methods of test generation from requirements.

				<ol style="list-style-type: none"> 3. Behavior modeling using UML: Finite state machines (FSM), Test generation from FSM models, Input space modeling using combinatorial designs. 4. Combinatorial test generation, Test adequacy assessment using: control flow, data flow, and program mutations, The use of various test tools. 5. Application of software testing techniques in commercial environments.
25	MSCS -305 GE-A	Cloud Computing	2019	<ol style="list-style-type: none"> 1. Understand the concepts, characteristics, delivery models and benefits of cloud computing 2. Understand the key security and compliance challenges of cloud computing 3. Understand the key technical and organisational challenges 4. Understand the different characteristics of public, private and hybrid cloud deployment models.
26	MSCS -305 GE-B	Big Data Analytics	2019	<ol style="list-style-type: none"> 1. Understand Big Data and its analytics in the real world, Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. 2. Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm, Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to generate analytics. 3. Implement Big Data Activities using

				Hive.
27	MSCS -305 GE-C	Artificial Neural Networks	2019	<ol style="list-style-type: none"> 1. Know the main provisions neuro mathematics, Know the main types of neural networks; 2. Know and apply the methods of training neural networks; 3. Know the application of artificial neural networks; 4. To be able to formalize the problem, to solve it by using a neural network.
28	MSCS -305 GE-D	Cyber Security	2019	<ol style="list-style-type: none"> 1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure. 2. Design, develop, test and evaluate secure software. 3. Develop policies and procedures to manage enterprise security risks. 4. Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training. 5. Interpret and forensically investigate security incidents.
29	MSCS -305 GE-E	Mobile App Development	2019	<ol style="list-style-type: none"> 1. Describe those aspects of mobile programming that make it unique from programming for other platforms, 2. Critique mobile applications on their design pros and cons, 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic

				and advanced phone features, and 5. Deploy applications to the Android marketplace for distribution.
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47. Commerce

Commerce (R)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2019	<ul style="list-style-type: none"> i. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation ii. Impart the ability to find out the cash flows and provide the skills to value goodwill iii. Create awareness about IFRS and segment reporting
2	102.	Financial Management	2019	<ul style="list-style-type: none"> i. Describe meaning, functions and objectives; role of financial manager. ii. Examine investment decision, capital budgeting, techniques of CB and methods of CB. iii. Investigate management of working capital, needs and concepts. iv. Asses financing decision, capital structure and capital theories. v. Design dividend decision and theories of dividend.

3	103.	Business Environment and Policy	2019	<ul style="list-style-type: none"> i. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment. ii. Illustrates economic environment nature and scope and new economic policy. iii. Develop political, legal environment; reasons for state intervention and government business interface. iv. Study the socio cultural environment nature, impact of social responsibility and business ethics. v. Interpret global environment; benefits and problems of MNCs and WTO.
4	104.	Organisational Behaviour	2019	<ul style="list-style-type: none"> i. Acquire knowledge on the conceptual framework and emerging issues of OB and Study different theories of personality and motivation ii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts. iii. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.
5	105a	Quantitative Techniques for Business Decisions	2019	<ul style="list-style-type: none"> i. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions. ii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions. iii. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.
7	201	Advanced cost	2019	<ul style="list-style-type: none"> i. Obtain knowledge on the concept of cost accounting and know how it is

		Accounting		<p>different from financial and management accounting;</p> <ul style="list-style-type: none"> ii. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. iii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. iv. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2019	<ul style="list-style-type: none"> i. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. ii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. iii. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic Financial Management	2019	<ul style="list-style-type: none"> i. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, ii. Explain Strategic financial management success factors and constraints. iii. Illustrate corporate valuation approaches and guidelines; value based management. iv. Identify financial distress and restructuring; countering financial distress. v. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2019	<ul style="list-style-type: none"> i. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. ii. Gain Knowledge on the historical backdrop of CG in India and the guild lines

				<p>pronounced by various committees for effective practice in India.</p> <p>iii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>iv. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2019	<p>i. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>ii. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>iii. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2019	<p>i. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>ii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>iii. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2019	<p>i. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>ii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>iii. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2019	<p>i. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p>

				<ul style="list-style-type: none"> ii. Study the concept of Responsibility Accounting and its uses and trends. iii. Know the essential parameters for evaluation of divisional performance and the emerging issues today iv. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.
15	303a	Tally with GST Application	2019	<ul style="list-style-type: none"> i. To acquaint oneself with skills to prepare financial statements through Tally ERP. ii. To understand basics of GST system and to know steps involved in generating GSTR reports. iii. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.
16	303c	Tax planning & Management	2019	<ul style="list-style-type: none"> i. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads ii. Acquire the knowledge on tax planning with regard to location iii. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.
18	305a	Fundamentals of Accounting	2019	<ul style="list-style-type: none"> i. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts ii. To help the students to acquire the skills of financial statement analysis iii. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.
19	401	Financial Derivatives	2019	<ul style="list-style-type: none"> i. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types,

				<p>uses and functions.</p> <p>ii. Prioritise options in financial derivatives and option pricing models.</p> <p>iii. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>iv. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2019	<p>i. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>ii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>iii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>iv. Understand Social cost benefit analysis and methods of SCBA</p> <p>v. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a .	Insurance Management	2019	<p>i. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>ii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>iii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>iv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>v. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2019	<p>i. Learn the basic concepts of Indian securities market.</p>

				<p>ii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>iii. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.</p>
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M.Com (A&F)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2019	<p>iv. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>v. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>vi. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2019	<p>vi. Describe meaning, functions and objectives; role of financial manager.</p> <p>vii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>viii. Investigate management of working capital, needs and concepts.</p> <p>ix. Asses financing decision, capital structure and capital theories.</p> <p>x. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2019	<p>vi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>vii. Illustrates economic environment nature and scope and new economic policy.</p>

				<p>viii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>ix. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>x. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2019	<p>iv. Acquire knowledge on the conceptual framework and emerging issues of OB and Study different theories of personality and motivation</p> <p>v. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>vi. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2019	<p>iv. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>v. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>vi. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost Accounting	2019	<p>v. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>vi. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>vii. Know the concept of equivalent production and accounting treatment for</p>

				<p>joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>viii. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2019	<p>iv. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>v. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.</p> <p>vi. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2019	<p>vi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>vii. Explain Strategic financial management success factors and constraints.</p> <p>viii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>ix. Identify financial distress and restructuring; countering financial distress.</p> <p>x. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2019	<p>v. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>vi. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>vii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>viii. Understand the CG standards and practices in India with focus on IT</p>

				and futures of CG in India.
11	205a	Working Capital Management	2019	<ul style="list-style-type: none"> iv. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital v. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management. vi. To provide the skills of inventory management with different techniques.
12	206a	e-Banking Operations	2019	<ul style="list-style-type: none"> iv. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India. v. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications. vi. Categorize the financial frauds in e-banking sector.
13	301	Security Analysis and Portfolio Management	2019	<ul style="list-style-type: none"> iv. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models. v. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index. vi. Synthesize portfolio revision, need and strategies.
14	302.	Accounting for Managerial Decisions	2019	<ul style="list-style-type: none"> v. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing. vi. Study the concept of Responsibility Accounting and its uses and trends. vii. Know the essential parameters for evaluation of divisional performance and

				<p>the emerging issues today</p> <p>viii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2019	<p>iv. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>v. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>vi. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2019	<p>iv. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>v. Acquire the knowledge on tax planning with regard to location</p> <p>vi. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2019	<p>iv. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>v. To help the students to acquire the skills of financial statement analysis</p> <p>vi. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2019	<p>v. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>vi. Prioritise options in financial derivatives and option pricing models.</p> <p>vii. Compose swap market futures, types and interest rate; pricing swaps.</p>

				<p>viii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2019	<p>vi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>vii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>viii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>ix. Understand Social cost benefit analysis and methods of SCBA</p> <p>x. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a .	Insurance Management	2019	<p>vi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>vii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>viii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>ix. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>x. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2019	<p>iv. Learn the basic concepts of Indian securities market.</p> <p>v. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>vi. Investigate into Indian stock exchanges and Illustrate about stock market</p>

				with special reference to BSE sensex and NSE indices.
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M.Com (FM)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2019	<p>vii. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>viii. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>ix. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2019	<p>xi. Describe meaning, functions and objectives; role of financial manager.</p> <p>xii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>xiii. Investigate management of working capital, needs and concepts.</p> <p>xiv. Asses financing decision, capital structure and capital theories.</p> <p>xv. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2019	<p>xi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>xii. Illustrates economic environment nature and scope and new economic policy.</p> <p>xiii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>xiv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>xv. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational	2019	vii. Acquire knowledge on the conceptual frame work and emerging issues of

		Behaviour		<p>OB and Study different theories of personality and motivation</p> <p>viii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>ix. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2019	<p>vii. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>viii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>ix. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost Accounting	2019	<p>ix. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>x. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>xi. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>xii. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2019	<p>vii. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>viii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in</p>

				<p>primary market.</p> <p>ix. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2019	<p>xi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>xii. Explain Strategic financial management success factors and constraints.</p> <p>xiii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>xiv. Identify financial distress and restructuring; countering financial distress.</p> <p>xv. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2019	<p>ix. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>x. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>xi. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>xii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2019	<p>vii. To impart basic knowledge on working capital concepts and source of WCand to provide the skills to estimate working capital</p> <p>viii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>ix. To provide the skills of inventory management with different techniques.</p>

12	206a	e-Banking Operations	2019	<p>vii. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>viii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>ix. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2019	<p>vii. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>viii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>ix. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2019	<p>ix. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>x. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>xi. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>xii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2019	<p>vii. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>viii. To understand basics of GST system and to know steps involved in</p>

				<p>generating GSTR reports.</p> <p>ix. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2019	<p>vii. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>viii. Acquire the knowledge on tax planning with regard to location</p> <p>ix. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2019	<p>vii. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>viii. To help the students to acquire the skills of financial statement analysis</p> <p>ix. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2019	<p>ix. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>x. Prioritise options in financial derivatives and option pricing models.</p> <p>xi. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>xii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2019	<p>xi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>xii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>xiii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>xiv. Understand Social cost benefit analysis and methods of SCBA</p> <p>xv. Contrast public projects context of Indian projects, approval procedure and</p>

				guidelines for preparation of feasibility report.
21	403a	Insurance Management	2019	<p>xi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>xii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>xiii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>xiv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>xv. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2019	<p>vii. Learn the basic concepts of Indian securities market.</p> <p>viii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>ix. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>

48. B.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BP101T	Human Anatomy and Physiology I– Theory	2019	1. Know the fundamental knowledge on the structure and functions of the various systems

				<p>of the human body.</p> <ol style="list-style-type: none"> 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy. 4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition
2	BP102T	Pharmaceutical Analysis I–Theory	2019	<ol style="list-style-type: none"> 1. It gives knowledge about the fundamental methodology to prepare different strength of solutions. 2. It facilitate the students to predict the sources of mistakes and errors. 3. It also helps to develop the fundamentals of volumetric analytical skills. 4. It provides the basic knowledge in the principles of electrochemical analytical techniques The student will be provided with the skills to improve by the course content in terms of analytical techniques to perform the estimation of different category drugs.
3	BP104T	Pharmaceutical Inorganic Chemistry– Theory	2019	<ol style="list-style-type: none"> 1.To understand the history and concept of pharmacopoeia and its editions. 2. Knowledge about the sources of impurities and

				<p>methods to determine the impurities in inorganic pharmaceuticals.</p> <p>3. Identification of limit tests of different pharmaceutical inorganic compounds.</p> <p>4. To understand the method to prepare inorganic pharmaceuticals.</p> <p>5. To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.</p> <p>6. To discuss the handling and applications of radiopharmaceuticals</p>
4	BP105T	Communication skills– Theory	2019	<ol style="list-style-type: none"> 1. To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation. 2. To help students overcome stage fear and take questions. 3. To enable the students to become global citizens. 4. This course will prepare the young pharmacy student to interact effectively

				<p>with doctors, nurses and other health workers.</p> <p>5. At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and addvalue to the pharmaceutical business.</p>
5	BP106RBT	REMEDIAL BIOLOGY–Theory	2019	<p>1.know the kingdoms of life.</p> <p>2.know the body fluids, absorption, digestion, respiration.</p> <p>3.know the excretory products, neural control, chemical coordination, and human reproduction.</p> <p>4.know the Nutrition in plants and photosynthesis.</p> <p>5.know the respiration in plants, cell, and tissues.</p>
6.	BP106RMT	Remedial Mathematics– Theory	2019	<p>1. This program shall create an awareness about the mathematical problems, to develop an statistical evaluation.</p> <p>2. To adopt skills in identifying and solving problems.</p> <p>3. Know the theory and their application in Pharmacy research</p> <p>4. Solve the different types of problems by</p>

				applying theory in drug discovery
7.	BP107P	Human Anatomy and Physiology – Practical	2019	<ol style="list-style-type: none"> 1. Differentiate the structures of the various systems of the human body. 2. Perform the experiments like blood cell count, hemoglobin content, bleeding and clotting time and various physiological Parameters theoretically and practically. 3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system
8.	BP108P	Pharmaceutical Analysis I – Practical	2019	<ol style="list-style-type: none"> 1. This course is designed to perform and get trained to the electro chemical tests like potentiometry, complexometry, polarimetry. 2. Hands on training on different titrations like complexometric titrations, precipitation titrations, redox titrations. 3. Under stand the process of limit test and procedures. 4. Gain knowledge on the determination of Normality, Molarity, Molality. 5. Under stand the process how to Prepare the solution and its standardization
9.	BP109P	Pharmaceutics I – Practical	2019	<ol style="list-style-type: none"> 1. This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts of preparing the different conventional dosage forms. 2. To understand the different pharmaceutical calculation involved in formulation; 3. Practical knowledge on formulation procedure of different dosage forms;

				<p>4. Highlights the Practical allowance to formulate different types of dosage forms;and</p> <p>Gain Knowledge on criteria to appreciate the good formulation for effectiveness</p>
10.	BP110P	Pharmaceutical Inorganic Chemistry– Practical	2019	<p>1. To recall the sources of limit tests, preparation and identification of compounds.</p> <p>2. To demonstrate the preparation of inorganic pharmaceuticals</p> <p>3. To apply knowledge to perform modified limit tests.</p> <p>4. To analyze various inorganic pharmaceutical compounds.</p> <p>5. To select suitable method for the preparation of inorganic pharmaceuticals.</p> <p>6.To assess quality of inorganic pharmaceuticals.</p>
11	BP111P	Communication skills– Practical	2019	<p>1.To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation.</p> <p>2.To help students overcome stage fear and take questions.</p> <p>3.To enable the students to become global citizens.</p>

				<p>4.This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers.</p> <p>5.At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and add value to the pharmaceutical business.</p>
12	BP112RBP	Remedial biology – Practical	2019	<ol style="list-style-type: none"> 1. How to use microscope, section cutting, mounting, staining, and permanent slide preparation. 2. About the cell and its functions. 3. About the frog with respect to human. 4. About the bone and tissues in humans and plants. 5. About the blood groups, blood pressure and tidal volume
13	BP 201T	Human Anatomy and Physiology-II – Theory	2019	<ol style="list-style-type: none"> 1. Know the gross morphology, structure and functions of various organs of the human body. 2. Perform all the hematological tests with the help of specimens 3. Note all the points regarding the tissues various organs of human body 4. Brief knowledge on clinical significance of various systems in our body.

				5. Application of the role of genetics in day to day life.
14	BP202T	Pharmaceutical Organic Chemistry I – Theory	2019	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers. 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms.
15	BP203T	Biochemistry – Theory	2019	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the biochemical Pathways of the body 2. understanding the catalytic role of enzymes, importance of enzyme inhibitors 3. Understand the genetic organization of mammalian genome 4. Understand the DNA in the synthesis of RNAs and proteins
16	BP 204T	PATHOPHYSIOLOGYI–Theory	2019	1. Identifies Name the signs, symptoms and

				<p>complications of the diseases.</p> <ol style="list-style-type: none"> 2. Students Get thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. 3. To Study the aetiology and pathogenesis of the selected disease states 4. The baseline knowledge required to practice medicine safely, confidently, rationally and effectively.
17	BP205T	Computer Applications in Pharmacy – Theory	2019	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
18	BP206T	Environmental Science– Theory	2019	<ol style="list-style-type: none"> 1. This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment. 2 To compare the natural, renewable and non-renewable resources and the problems associated with them.

				<p>3 To motivate the learners to participate in environment protection and improvement.</p> <p>4 To analyze the concepts of eco system including structure and functions.</p> <p>5 To adopt skills in identifying and solving environmental problems.</p> <p>6 To develop an attitude of concern for the environment.</p>
19	BP207P	Human Anatomy And Physiology II – (Practical)	2019	<p>This subject is to inculcate the students about the structure and functioning of various systems and to perform hematological tests, body temperature and BMI.</p> <p>1. Prepare the charts and tables for easy understanding of various systems and positive & negative feed back mechanism.</p> <p>2. Awareness on family planning devices and pregnancy diagnosis test.</p> <p>3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system</p>

20	BP208P	Pharmaceutical Organic Chemistry I - Practical	2019	<ol style="list-style-type: none"> 1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes. 2. Get hands- on- experience in basic techniques of organic synthesis.
21	BP209P	Biochemistry – Practical	2019	<ol style="list-style-type: none"> 1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch), Proteins (albumin and Casein) 2. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method) 3. Qualitative analysis of urine for abnormal constituents 4. Determination of blood creatinine, blood sugar, serum total cholesterol
22	BP210P	Computer Applications in Pharmacy – Practical	2019	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
23	BP 301 T	Pharmaceutical organic chemistry II (Theory)	2019	<ol style="list-style-type: none"> 1. Guess and writethestructure according to the stereochemical specifications. 2. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. 3. Assess and understand the pharmaceutical applications and importance of the specified named reactions
24	BP 302 T	Physical Pharmaceutics I (Theory)	2019	The course deals with the various physical and physicochemical properties, and principles

				involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms
25	BP 303 T	Pharmaceutical Microbiology (Theory)	2019	<ol style="list-style-type: none"> 1. To acquire knowledge on HVAC systems, layout designs, GMP standards sanitation personal hygiene in sterile product manufacturing facilities. 2. To know the various types of sterile products with their formulation in large scale industries. 3. To develop skill for lab scale manufacture of few SVPs, LVPs, ophthalmic products with labelling and quality control.
26	BP 304 T	Pharmaceutical Engineering (Theory)	2019	<ol style="list-style-type: none"> 1. To know various unit operations involved in manufacturing of pharmaceuticals. 2. To understand the concepts of flow of fluids, size reduction and size separation. 3 To perform different mechanisms of heat transfer. 4 To compare and contrast different types of evaporation and distillation process.

				<p>5 To determine the factors influencing mixing, filtration and centrifugation.</p> <p>6 To elaborate various preventive methods used for corrosion control in pharmaceutical industries</p>
27	BP 305 P	Pharmaceutical organic chemistry II (Practical)	2019	<p>1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes.</p> <p>2. Get hands-on experience in basic techniques of organic synthesis</p>
28	BP 306 P	Physical Pharmaceutics I (Practical)	2019	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods
29	BP 307 P	Pharmaceutical Microbiology (Practical)	2019	<p>1. Learners gain knowledge on some sterile marketed products along with blood products which are not possible in laboratory and large scale manufacture.</p> <p>2. To know the skills of aseptic techniques principles of sterilization and validation of aseptic areas.</p> <p>3. Knowledge on blood products and surgical dressing with their formulation details, production and quality control.</p>
30	BP 308 P	Pharmaceutical Engineering (Practical)	2019	1. To understand the basic principles involved in

				<p>unit operations such as size reduction, size separation, distillation and drying.</p> <ol style="list-style-type: none"> To demonstrate and explain about the construction, working and applications of pharmaceutical equipment's such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer. To experiment with the process variables of filtration, evaporation and infer the same. To determine radiation constant of brass, iron, unpainted and painted glass. To determine overall heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation. To estimate moisture content, loss on drying and construct drying curves for calcium carbonate and starch
31	BP 401 T	Pharmaceutical organic chemistry III (Theory)	2019	<ol style="list-style-type: none"> Guess and write the structure according to the stereochemical specifications. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. Assess and understand the pharmaceutical applications and importance of the specified named reactions.
32	BP 402 T	Medicinal chemistry I (Theory)	2019	<ol style="list-style-type: none"> Fundamental knowledge on the structure,

				<p>chemistry and therapeutic value of drugs.</p> <ol style="list-style-type: none"> 2. Understand the Structural Activity Relationship (SAR) of drugs. 3. Importance of physicochemical properties and metabolism of drugs. 4. Chemical synthesis of important drugs under each class.
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33	BP 403 T	Physical Pharmaceutics II (Theory)	2019	<ol style="list-style-type: none"> 1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. 2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms
34	BP 404 T	Pharmacology I (Theory)	2019	<ol style="list-style-type: none"> 1. The subject is to impart knowledge about the action of the drug, different routes of drug administration, toxic effects etc. 2. Students would have understood the pharmacological actions of different categories of drugs. 3. Mechanism of drug action at organ system, sub cellular and macromolecular levels have been studied. 4. They have understood the application of basic pharmacological knowledge in the prevention and treatment of different diseases. 5. Signal transduction mechanism of various receptors have been understood
35	BP 405 T	PharmacognosyAndPhytochemistry I	2019	This subject is intended to impart students about the

		(Theory)		<p>fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p> <ol style="list-style-type: none"> 1. Significance of pharmacognostic parameters & study of crude drugs. 2. Understand the underlying reason of evolutionary significance of secondary metabolites production in plants & other organisms & deduce their significance as medicinal molecules. 3. How these primary metabolites are used comprehensively as a source to develop Pharmaceutical & industrial applications. <p>Study about the source, name, chemical structures, methods of extraction, qualitative & quantitative analysis of glycosides & tannin.</p>
36	BP 406 P	Medicinal chemistry I (Practical)	2019	<p>This subject is to inculcate the students will able to know</p> <ol style="list-style-type: none"> 1. Basic knowledge on scope of Medicinal chemistry and interlinked subjects 2. Handling the glassware and Preparations of the synthetic drugs and how to calibrate the chemicals. 3. Perform the synthesis of the drugs with their chemical structures. 4. Compare the test drug with that of the standard

				<p>drug by assay methods.</p> <p>5. Understand the partition coefficient of any two drugs.</p>
37	BP 407 P	Physical pharmaceutics II (Practical)	2019	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods
38	BP 408 P	Pharmacology I (Practical)	2019	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. <p>Demonstration of different simulation methods</p>
39	BP 409 P	Pharmacognosy and Phytochemistry (Practical)	2019	<ol style="list-style-type: none"> 1. Demonstrate chemical tests to identify unorganized crude drugs 2. Evaluate the quality and purity of crude drugs 3. Perform linear measurements for crude drug identification
40	BP501T	MEDICINAL CHEMISTRY – II- Theory	2019	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activityrelationships of drugs, importance of physicochemical properties and metabolism ofdrugs.

				The syllabus also emphasizes on chemical synthesis of important drugs under each class.
41	BP502T.	Industrial Pharmacy-I- Theory	2019	Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product
41	BP503T.	PHARMACOLOGY-II- Theory	2019	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.
42	BP504T.	PHARMACOGNOSY AND PHYTOCHEMISTRY II- Theory	2019	The main purpose of subject is to impart the students the knowledge of how these secondary metabolites is produced in the crude drugs, how to isolate and identify and produce them industrially. Also, this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine
43	BP505T	PHARMACEUTICAL JURISPRUDENCE- Theory	2019	This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.
44	BP506P.	Industrial Pharmacy-I- Practical	2019	This is help to understand the basic information of formulation process and how to optimise quality control solid, semisolid and parenteral dosage forms
45	BP507P	PHARMACOLOGY-II- Practical	2019	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc.

				<p>3. Evaluate the different activities on animals.</p> <p>4. Demonstration of different simulation methods. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments.</p>
46	BP508P.	PHARMACOGNOSY AND PHYTOCHEMISTRY II - Practical	2019	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents by use chromatographic technique
47	BP601T.	MEDICINAL CHEMISTRY – III- Theory	2019	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs
48	BP602T.	PHARMACOLOGY-III- Theory	2019	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition, emphasis on the principles of toxicology and chrono pharmacology.
49	BP603T.	HERBAL DRUG TECHNOLOGY- Theory	2019	This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs,

				herbal cosmetics,natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs
50	BP604T.	BIOPHARMACEUTICS AND PHARMACOKINETICS- Theory	2019	This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems raised therein
51	BP605T.	PHARMACEUTICAL BIOTECHNOLOGY - Theory	2019	Biotechnology has a long promise to revolutionize the biological sciences and technology. Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting. Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. Biotechnology has already produced transgenic crops and animals and the future promises lot more. It is basically a research-based subject.
52	BP606T.	PHARMACEUTICAL QUALITY ASSURANCE- Theory	2019	This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs
53	BP607P.	MEDICINAL CHEMISTRY- III- Practical	2019	This course helps to how to separation and identification compound given unknown mixture. It imparts take it knowledge on crude separation and identification technique
54	BP608 P.	PHARMACOLOGY-III- Practical	2019	1.Handling of different instruments used in Experimental Pharmacology. 2.Know about the different routes of drug administration, blood withdrawal etc.,

				<p>3. Evaluate the different activities on animals.</p> <p>4. Demonstration of different simulation methods.</p> <p>5. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments</p>
55	BP609P.	HERBAL DRUG TECHNOLOGY-- Practical	2019	This subject gives the student the knowledge of basic understanding of herbal drug formulation and determination of herbal content
56	BP701T	Instrumental Methods of Analysis (Theory)	2019	<p>1) To understand selected instrumental analytical techniques (spectroscopic and chromatographic methods) and differentiate with volumetric analysis.</p> <p>2) To gain knowledge on interaction of EMR with matter and to build the analytical understanding at the level of atom, group and molecular structure of organic and inorganic compounds with different functional groups and their applications in pharmacy.</p> <p>3) To maximize knowledge on characterization and estimation of ions by spectroscopical techniques</p> <p>4) To simplify affinity of matter with stationary phase and mobile phase, physical and chemical.</p> <p>This subject is intended to impart students about the fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how</p>

				to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.
57	BP702T	Industrial Pharmacy II (Theory)	2019	<ol style="list-style-type: none"> 1. This course is designed to impart knowledge and skills necessary to train the students to be on par with the routine of Industrial activities in Production. 2. On completion of this course, it is expected that students will be able to understand. 3. Handle the scheduled activities in a pharmaceutical firm. Manage the production of large batches of pharmaceutical formulations
58	BP703T	Pharmacy Practice (Theory)	2019	<ol style="list-style-type: none"> 1. Understand the elements of pharmaceutical care and provide comprehensive patient care services 2. Interpret the laboratory results to aid the clinical diagnosis of various disorders. <p>Provide integrated, critically analysed medicine and poison information to enable healthcare professionals in the efficient patient management</p>
59	BP704T	Novel Drug Delivery System	2019	<ol style="list-style-type: none"> 1. This subject is designed to impart basic knowledge

		(Theory)		<p>on the area of novel drug delivery systems. Upon completion of the course student shall be able</p> <ol style="list-style-type: none"> 2. To understand various approaches for development of novel drug delivery systems. 3. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation
60	BP705P	Instrumental Methods of Analysis (Practical)	2019	<ol style="list-style-type: none"> 1. Discusses the effect of impurities on the quality of drugs and behavioural pattern of drugs 2. Aids in understanding the SOP and usage of software associated with various analytical instruments 3. Helps in gaining knowledge of interpretation of spectra and of chromatograms
61	BP706PS	Practice School	2019	<ol style="list-style-type: none"> 1. Work in team and undertake a project in the area of Pharmacy 2. Present, exhibit and document the project work • Develop a project report 3. Apply concepts of pharmaceutical sciences for executing the project 4. Apply appropriate research methodology while

				<p>formulating a project</p> <p>5. Define specifications, synthesize, analyse, develop and evaluate a project</p>
62	BP801T	Biostatistics and Research Methodology (Theory)	2019	<ol style="list-style-type: none"> 1. Develop the ability to apply the methods while working on a research project work 2. Describe the appropriate statistical methods required for a particular research design 3. Choose the appropriate research design and develop appropriate research hypothesis for a research project 4. Develop a appropriate framework for research studies
63	BP802T	Social and Preventive Pharmacy (Theory)	2019	<ol style="list-style-type: none"> 1. After the successful completion of this course, the student shall be able to: Acquire high consciousness/ realization of current issues related to health and pharmaceutical problems within the country and worldwide. 2. Have a critical way of thinking based on current healthcare development. <p>Evaluate alternative ways of solving problems related to health and pharmaceutical issues</p>
64	BPH 409	Biopharmaceutics & Pharmacokinetics	2019	<ol style="list-style-type: none"> 1. Compare the in-vitro drug release profile of different marketed products

		Practicals		<ol style="list-style-type: none"> 2. Perform the solubility enhancement techniques for improvement of drug release of poorly water-soluble drugs 3. Estimate the bioavailability (absolute and relative) and bioequivalence from the given clinical data 4. Calculate the drug content in blood sample using Area Under Curve approach 5. Calculate and interpret various pharmacokinetic parameters from the given clinical data
65	BP803ET	Pharma Marketing Management (Theory)	2019	
66	BP804ET	Pharmaceutical Regulatory Science (Theory)	2019	<ol style="list-style-type: none"> 1. Explain the process of drug discovery, development and generic product development 2. Describe the regulatory approval process and registration procedures for API and drug products. 3. Basic understanding of regulations of India with other global regulated markets 4. Understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 5. Learn the basic understanding the importance of orange book, Federal Register, Code of Federal Regulatory, and purple book

67	BP805ET	Pharmacovigilance (Theory)	2019	<ol style="list-style-type: none"> 1. Explain the regulatory requirements for conducting clinical trial 2. Describe in detail about various types of clinical trial designs 3. Explain the responsibilities of key players involved in clinical trials 4. Describe the documentary requirements for Clinical trials 5. Explain Adverse drug reaction and its management
68	BP806ET	Quality Control and Standardization of Herbals (Theory)	2019	<ol style="list-style-type: none"> 1. Explain basic tests for drugs to obtain dosage form for pharmaceutical substances and medicinal plants 2. Explain methods for evaluation of pharmaceutical substances, medicinal plants and commercial crude drugs. 3. Describe guidelines for cGMP, GAP, GMP and GLP for quality assurance of herbal drugs in industry 4. Describe guidelines for quality control of herbal drugs and evaluation of safety and efficacy of herbal medicines.

				5. Explain regulatory approval process and their registration in Indian and international markets.
69	BP807ET	Computer Aided Drug Design (Theory)	2019	<ol style="list-style-type: none"> 1. Explain the various stages of drug discovery and learn the concept of bioisosterism. 2. Describe physicochemical Properties and the techniques involved in QSAR 3. Explain various structure-based drug design methods (Molecular docking, Denovo drug design) 4. Learn the concept of pharmacophore and modelling techniques 5. Explain the various techniques in Virtual Screening
70	BP808ET	Cell and Molecular Biology (Theory)	2019	<ol style="list-style-type: none"> 1. It deals with understanding the molecular aspects of the biology. 2. It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription. 3. It also helps in understanding the concepts of cellular function 4. It deals with understanding the molecular aspects of the biology. It majorly emphasizes the concepts

				<p>of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription.</p> <p>It also helps in understanding the concepts of cellular function</p>
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	BP809ET	Cosmetic Science (Theory)	2019	<ol style="list-style-type: none"> 1. Cosmetic Science is an interdisciplinary applied science program providing students with the opportunities to develop professional skills and fundamental concepts driving cosmetic science. 2. Cosmetic Science focuses on the needs of the cosmetic industry and its consumers, in addition to providing students with the critical and evaluative skills to become professional scientists. 3. Cosmetic Science covers a range of sciences, both pure and applied, formulation development and industry operations, all of which give you a broad range of career opportunities.
	BP810ET	Experimental Pharmacology (Theory)	2019	<ol style="list-style-type: none"> 1. Study of commonly used instruments in experimental pharmacology. 2. Introduction to CPCSEA guidelines and OECD guidelines. 3. Introduction to animal physiology with their biochemical reference values in various

				<p>animal species.</p> <ol style="list-style-type: none"> 4. Study of methods for collection of blood, body fluids and urine from experimental animals. 5. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
	BP811ET	Advanced Instrumentation Techniques (Theory)	2019	<ol style="list-style-type: none"> 1. Apply the analytical techniques to study bulk-drug pharmaceuticals, quality control. 2. Develop in-depth knowledge and critical awareness of the application of modern. 3. Know preparation and standardization of various concentrations of acids and bases. 4. Understand the basic concepts involved in electro-analytical techniques and its types. 5. Understand theory, principle, types and techniques of coulometric titration
	BP812ET	Dietary Supplements and Nutraceuticals (Theory)	2019	<ol style="list-style-type: none"> 1. Know different Acts and guidelines that regulate Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food &

				<p>Nutraceuticals industry in India.</p> <p>2. Understand the approval process and regulatory requirements.</p> <p>3. Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food& Nutraceuticals</p>
	BP813PW	Project Work	2019	<p>6. Work in team and undertake a project in the area of Pharmacy</p> <p>7. Apply concepts of pharmaceutical sciences for executing the project</p> <p>8. Apply appropriate research methodology while formulating a project</p> <p>9. Define specifications, synthesize, analyse, develop and evaluate a project</p> <p>10. Present, exhibit and document the project work • Develop a project report</p>

M.Pharmacy

46. M.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2019	<ol style="list-style-type: none">6. Describe the instruments in experimental pharmacology.7. Know CPCSEA guidelines and OECD guidelines.8. Know animal physiology with their biochemical reference values in various animal species.9. Do collection of blood, body fluids and urine from experimental animals.10. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
2	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2019	<ol style="list-style-type: none">1. The pathophysiology of selected disease states and the rationale for drug therapy.2. The controversies in drug therapy.3. The importance of preparation of individualized therapeutic plans based on diagnosis.4. Understanding the concepts of Clinical research;Therapeutic drug monitoring (TDM) ; concepts of Pharmacotherapeutics, Management & Current Good Clinical Practice of various diseases.5. Studying of various types, mechanisms of Drug

				interaction; rational for drug combinations; Drug Toxicity and its prevention; Adverse drug reactions and its monitoring
3	MPH 103	Practical 1	2019	<ol style="list-style-type: none"> 1. Recording of concentration response curve (CRC) of acetylcholine 2. Record of the CRC of 5-HT on rat fundus preparation. 3. Record of the CRC of histamine on guinea pig ileum 4. Inotropic and chronotropic effects of drugs on isolated frog heart
4	MPH 104	Practical-II(MAT)	2019	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2019	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR.

				<p>3. Discusses the principle and applications of chromatographic techniques</p> <p>4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2019	<p>1. Awareness of ethical issues and basic ethical approaches.</p> <p>2. Improved writing skills and understanding of ethical conflict.</p> <p>3. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>4. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>5. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2019	<p>1. Know the fundamental knowledge on the structure and functions of the various systems of the human body.</p> <p>2. understanding all the homeostatic mechanisms of the body</p> <p>3. Understand the relationship of anatomy with various disciplines of pharmacy.</p> <p>4. Understand the dynamic constancy of the</p>

				body, cell and its components, tissue and types of tissue, blood and its function and composition
8.	MPH 201A (Pharmacology)	Molecular Pharmacology	2019	<ol style="list-style-type: none"> 1. Explain the modes of action of drug at the cellular level by describing their interactions with target proteins 2. Explain the receptor signal transduction processes. 3. Explain the molecular pathways affected by drugs. 4. Understanding the applicability of molecular pharmacology and biomarkers in drug discovery process. 5. Outline the molecular features that are responsible for agonist and antagonist binding, and coupling to effector processes, with reference to the nicotinic, muscarinic, and β-adrenergic receptors
9.	MPH 202 A	Methods in Drug Evaluation	2019	<ol style="list-style-type: none"> 1. Know the commonly used instruments in experimental pharmacology. 2. describe the animal physiology with their biochemical reference values in various animal species. 3. Study of methods for collection of blood, body fluids and urine from experimental animals. 4. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
10.	MPH 203	Practical 1	2019	1. Calculation of the PA_2 Calculate the PA_2

				<p>Value</p> <ol style="list-style-type: none"> 2. Interpolation bioassay 3. Matching or bracketing bioassay 4. Three point bioassay 5. Four point bioassay
11	MPH 204	Practical-II(BPK)	2019	<ol style="list-style-type: none"> 1. Compare and differentiate between compartmental and non compartmental analysis 2. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms 3. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data. 4. Compare the bioequivalence of two drug products
12	MPH 205	BIO-PHARMACEUTICS & PHARMACOKINETICS	2019	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug

				3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 2. Learn about morals, values & work ethics. 3. Develop commitment 4. Learn about the different professional roles. 5. Ethical, social and environmental awareness 6. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2019	
15	MPH 301	Mid-Term Evaluation of Research project	2019	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively

				unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2019	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.

M. Pharmacy (Pharmaceutics)

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101B	ADVANCED	2019	1. Course designed to impart advanced

		PHARMACEUTICAL TECHNOLOGY		<p>knowledge and skills required to learn various aspects and concepts at pharmaceutical industries.</p> <ol style="list-style-type: none"> 2. The Active Pharmaceutical Ingredients and Generic drug Product 3. The elements of Preformulation studies, Objectives Upon completion of the course, student shall be able to understand Optimization Techniques. 4. Industrial Management and GMP Considerations, development & Stability Testing, sterilization process, Pilot Plant Scale Up Techniques & packaging of dosage forms
2	MPH 102B(Pharmaceutics)	Advanced Pharmaceutics	2019	<ol style="list-style-type: none"> 1. Upon completion of this program the student will have fundamental knowledge in preparing conventional dosage forms, pharmaceutical calculation involved in formulation and appreciate the importance of good formulation for effectiveness. 2. The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms using solubility studies and basic theories of dissolution.

				3. To formulate and evaluate various novel drug delivery systems based on the molecular weight determination of polymers and its stability studies.
3	MPH 103	Practical-I(PHARMACEUTICS)	2019	<ol style="list-style-type: none"> 1. The passage of drugs, biopharmaceutical parameters. 2. How to do dissolution studies for the dosage forms to know the bioavailability of the drugs. 3. Solubility studies for the drugs based on its pH and its applications in the formulations of drug delivery systems. 4. To determine the molecular weight of the polymers. 5. Gives an fundamental knowledge on the stability studies
4	MPH 104	Practical-II(MAT)	2019	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 7. Discusses the principle and applications of chromatographic techniques 8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage form
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2019	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR,

				<p>FTIR.</p> <p>7. Discusses the principle and applications of chromatographic techniques</p> <p>8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>9. Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2019	<p>6. Awareness of ethical issues and basic ethical approaches.</p> <p>7. Improved writing skills and understanding of ethical conflict.</p> <p>8. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>9. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>10. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2019	
8.	MPH 201B (Pharmaceutics)	INDUSTRIAL PHARMACY	2019	<p>1. The elements of preformulation studies.</p> <p>2. Acquire skill in preparation of different types of tablets.</p> <p>3. Acquire knowledge for evaluation of various dosage forms.</p> <p>4. Acquire the knowledge of processing of dosage form on large scale that suit pharma industry</p>
9.	MPH202B(Pharmaceutics)	PROCESS VALIDATION & CGMP	2019	<p>1. Acquire knowledge on various quality assurance systems, processes and current regulatory guidelines related to</p>

				<p>manufacturing and distribution.</p> <p>2. Address quality issues and provide solutions needed to attain Quality leadership in an environment of continual improvement.</p> <p>3. Understand the importance of effective documentation.</p> <p>4. To prepare professionally competent individuals with Quality concept being engrained to achieve global quality standards in pharmaceutical industries</p>
10.	MPH 203	Practical-I	2019	<p>1. Gain knowledge and acquire skills to prepare different types of tablets.</p> <p>2. Highlights the handling of different equipment's for the preparation and evaluation of various dosage forms</p>
11	MPH 204	Practical-II(BPT)	2019	<p>5. Compare and differentiate between compartmental and non compartmental analysis</p> <p>6. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms</p> <p>7. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data.</p>

				8. Compare the bioequivalence of two drug products
12	MPH 205	BIO-PHARMACEUTICS & PHARMACOKINETICS	2019	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2019	<ol style="list-style-type: none"> 7. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 8. Learn about morals, values & work ethics. 9. Develop commitment 10. Learn about the different professional roles. 11. Ethical, social and environmental awareness 12. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2019	
15	MPH 301	Mid-Term Evaluation of Research project	2019	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout

				<p>the program.</p> <ol style="list-style-type: none"> 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2019	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a

				large, relatively unstructured "assignment" over the course of the semester.
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1.1.3 Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development

2020-2021

SVU COLLEGE OF ARTS

1. Adult & Continuing Education

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MAAE -1.1	Alternative Learning Systems	2020	<ol style="list-style-type: none">1. Remembrance of different forms of learning.2. Application of different technology support services for effective learning.3. Organization and administration of nonformal education programmes.4. Evaluation of nonformal education programmes.	
2	MAAE-1.2	Policy Studies In Adult/Continuing Education	2020	<ol style="list-style-type: none">1. Identify the socio-political movements during pre-independence period for the promotion of literacy.2. Analyze the trends of adult education programmes during post-independence period from social education to saakshar Bharat Mission.3. Describe the National and International organizations efforts for the promotion of literacy at various levels.4. Explain the State & Central Govt policies on adult education and special reference to literacy, post-literacy and continuing education.	
3	MAAE-1.3	Adult Psychology And Learning	2020	<ol style="list-style-type: none">1: Acquire knowledge on psychological foundations and its relevance to Adult Education and Learners.	

				<p>2: Learn classification of motives and motivation techniques to motivate the Adult Learner.</p> <p>3: Compare the Adult Personality & Child personality based on three Domain principles.</p> <p>4: Examine the Adult Learning characteristics and theories of learning, eventually he/she will apply all aspects in adult class room activity.</p>	
4	MAAE-1.4	Socio-Philosophical Foundatons Of Adult Education	2020	<ol style="list-style-type: none"> 1. Create thinking capacity to survival in the present society with philosophical approach. 2. Know great eminent leaders biography, sacrifices their lives for society. 3. Aware Dalit movement, women movement, co-operative movement in society especially rural areas. 4. Examine the problems of society with reference to bonded labor, child labour, untouchability, transgender and provide awareness on human rights. 	
5	MAAE-1.5	Communication Methods in Adult Education	2020	<ol style="list-style-type: none"> 1. Remembering the concept and methods of communication and their application to adult Education 2. Identifying different models of 	

				<p>communication.</p> <p>3. Describing the media of communication and their utility in continuing education.</p> <p>4. Realising the use of different Audio-visual aids in teaching learning process.</p>	
6	MAAE-1.6	Human Values And Professional Ethics-I	2020	<p>know the importance of professional ethics and to implement the ethical values in various professions.</p> <p>2. understand about the Good and bad values and to analyze the basic moral concepts.</p> <p>3. inculcate the students in the aspects of pursharthas .</p> <p>4. Know different crimes and its impact on personal and social life and theories of punishment</p>	
7	MAAE-2.1	Recent Trends In Adult And Continuing Education	2020	<p>.Identify the variations of literacy growth among States and Nation with reference to gender, rural and urban.</p> <p>2.Recognize the functions, activities of JSS and Saakshar Bharat Mission, to promote Life Long learning.</p> <p>3. Understand the five-year plan period programmes in terms of literacy, non-</p>	

				formal and functional literacy. 4. Examine the significance of the extension activities as third dimension of literacy programmes at field level.	
8	MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2020	<ol style="list-style-type: none"> 1. Remembering the meaning, foundations and theories of curriculum development with reference to adult learners. 2. Distinguishing different principles and approaches of curriculum development. 3. Interpreting the needs and interests of lifelong learners. 4. Executing to evaluate Adult Education programmes 	
9	MAAE-2.3	Research Methods In Adult Education	2020	<ol style="list-style-type: none"> 1. Understanding the concepts and methods of research. 2. Adopting the suitable sampling methods for research studies. 3. Developing tools for research studies. 4. Ability of research report writing. 	
10	MAAE-2.4	Field Work & Practical Assignments	2020	Application of knowledge and	

				<p>skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	
11	MAAE-2.5	Management Of Adult/Continuing Education	2020	<ol style="list-style-type: none"> 1. Know the principles of Management, Planning and Organizing capacity to conduct Adult Education Programmes. 2. Develop Social and Communication Skills to organize village, Mandal, District, State and Central level programmes. 3. Acquire project techniques for sustainable programmes. 4. Learn and enhance research skills to write project report, monitoring and evaluation of data of Adult Education Programme. 	
12	MAAE-2.6	Human Values And Professional Ethics-Ii	2020	Understand and recognize the importance of Value Education & Human Values and also try	

				<p>to follow the traditional values of family, women and elders in the society.</p> <p>2: Examine code of ethics for medical and health care professionals. They Can sensitize the rural people on Health Issues & Problems.</p> <p>3: Explain the Environmental Protection and relationship between Man and Nature, causes of pollution and impact on environmental health.</p> <p>4: Recognize the need of Social ethics and fight against the anti-social activities, Organ trade, Human trafficking etc.</p>	
13	MAAE-3.1	Training In Adult And Continuing Education	2020	<ol style="list-style-type: none"> 1. Identify the importance of training in Adult and Continuing Education programmes and differences between training and education. 2. Know the training methods, training materials to organize the Adult and Continuing Education programmes. 3. Follow the teaching methods like Lecture, discussion, demonstration and Role Play methods. 4. Recognize training facilities at different levels like National, State, District and Local. 	

14	MAAE-3.2	Comparative Studies In Adult Education	2020	<p>1: Compare the Adult Education Programmes of different countries based on its aims and significance.</p> <p>2: Compare and contrast of Adult Education movement and progress in different countries like UK, USA, Denmark etc with reference to India.</p> <p>3: Find out the similarities and dissimilarities of Adult Education Programs in selected countries.</p> <p>4: Identify the problems of Adult Education in terms of Planning, Organization and Budget activities in developing countries and India.</p>	
15	MAAE-3.3	Material Development For Adult And Continuing Education	2020	<ol style="list-style-type: none"> 1. Identify the significance of learning materials in Adult Education classes. 2. Design the teaching learning activity objectives for better performance of Teacher educator in Adult Education Programmes. 3. Enhance language forms and competence and tune with the needs of the learner. 4. Develop teaching learning materials for self-learning 	
16	MAAE-3.4a	Peoples' participation And Development	2020	<ol style="list-style-type: none"> 1. Analysing the role and functions of 	

				<p>people committees,</p> <ol style="list-style-type: none"> 2. Understanding the functions of Panchayat Raj institutions. 3. Knowledge on the role of co-operatives in rural development. 4. Ability to catalyse the performance of PRIs and co-operatives. 	
17	MAAE-3.4b	Vocational Education And Skill Development	2020	<ol style="list-style-type: none"> 1. Identify the relationships of Vocational Education and Adults development. 2. Understand the institution training importance and its practices in vocational training. 3. Identify the issues of Rural Vocational training in India and Asian Countries. 4. Provide Vocational Guidance and Counselling for Adult trainees. 	
18	MAAE-3.4c	Guidance And Counselling In Adult And Continuing Education	2020	<ol style="list-style-type: none"> 1. Remembering the concept and theories and perspectives of guidance and counselling in educational process. 	

				<ol style="list-style-type: none"> 2. Recollecting understanding and analysis of educational problems of a clientele group. 3. Knowing the roles and functions of guidance counsellor. 4. Analysing the use of computers and internet in guidance and counselling. 	
19	MAAE-4.1	Monitoring And Evaluation	2020	<p>Identify the concept of monitoring and monitoring systems in adult education</p> <ol style="list-style-type: none"> 2. Describe the different evaluation models. 3. Demonstrate the tools and techniques of evaluation. 4. Understand the importance of learner evaluation. 	
20	MAAE-4.2	Human Resource Development And Management In Lifelong Learning	2020	<ol style="list-style-type: none"> 1. Understand the importance of human resource development and its historical background. 2. Analyze the human capital and its functions in Adult Education. 3. Explain the cost benefit process and problems of measurements. 4. Identify the need of planning in human resource development and 	

				relation to Adult Education.	
21	MAAE-4.3a	Environment And Education	2020	<p>1. Understand the fundamental aspects of environment and need of environmental protection.</p> <p>2: Interpret the environmental crisis with reference to pollutions and its impact of human life need of Environmental Conservation.</p> <p>3: Know the environmental laws and role of individual and community to Control environmental pollution.</p> <p>4: Explain Ecology and eco factors for Ecological Balance.</p>	
22	MAAE-4.3d	Population Education	2020	<ol style="list-style-type: none"> 1. Recollecting the concepts, needs and importance of population related terminologies. 2. Analysing the causes and consequences of population growth. 3. Distinguishing the roles of different agencies in promotion of population education and control. 4. Identifying the different National population policies and influences 	

				fertility, mortality and migration.	
23	MAAE-4.4	Dissertation / Project Work	2020	<p>Application of knowledge and skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	

2. Ancient Indian History, Cultural Archeology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	AIHC&A-304(B)	b) Social and Political Institutions in Ancient India	2020	<ul style="list-style-type: none"> ➤ The student will be able to understand the basic features of various theories and thoughts used in archaeological interpretations. ➤ They can formulate a research proposal and decide on appropriate materials and methods of analysis. ➤ They can present the findings and the process of conducting research in written and verbal formats. 	

2	AIHC&A-305(A)	a) Outlines of Indian History	2020	<ul style="list-style-type: none"> ➤ The non-history students as an external elective course become familiar in understanding the broad phases of Indian history and culture 	
3	AIHC&A-404(B)	b) India's Early Cultural Contacts with other Countries	2020	<ul style="list-style-type: none"> ➤ Cross regional cultural diffusion has been an important aspect of historical evolution. ➤ A strong and vibrating civilization having its impact felt upon other contemporary cultures has been a common phenomenon of history ➤ The students were able to understand the influence of Indian culture on Central Asia, south east asia, Japan, Tibet, Persia, Greece, Rome, Indo- China 	

3. Area Studies Programme

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1. 1	SEAP-104	ANCIENT INDIAN HISTORY UPTO 1206 A.D.	2020	<ol style="list-style-type: none"> 1) Students understand the causes for the spread of Indian culture in Southeast Asia. 2) Know the different Indian dynasties of the past in Southeast Asia. 3) Students will be able to learn the impact of Indian cultural on Southeast Asian societies 	

2.	SEAPS-203	REGIONAL GEOGRAPHY OF SOUTH PACIFIC AND EAST ASIA	2020	<ul style="list-style-type: none"> 1) Students identify physical setting, landforms, climate and soils of South Pacific. 2) Comprehend on Australia, New Zealand, Japan and China <p>Recognize the economic trends in South Pacific and East Asian nations</p>	
3.	SEAPS-303	INDIA AND THE WORLD	2020	<ul style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations. 	
4.	SEAPS-402	DEVELOPING BLUE ECONOMY	2020	<ul style="list-style-type: none"> 1) Develop an understanding of the rise of industrial economies like Singapore, Malaysia, Thailand and Indonesia. 2) Comprehend of the economies of Australia and New Zealand. 3) Ability to know the Regional Economic Groups like ASEAN, ESCAP, APEC and EAS. 	

TOURISM:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1.	T-102	PLANNING AND DEVELOPMENT OF TOURISM	2020	<ul style="list-style-type: none"> 1) Students understand geographical profile of different countries of Southeast Asia. 2) Know the trends in population movement within Southeast Asia. 3) Students will be able to assess location significance and various infrastructural developments.
2	T. 201	HISTORICAL APPLICATION OF TOURISM IN INDIA	2020	<ul style="list-style-type: none"> 1) Students list the Christian Missionary activities in Southeast Asian countries. 2) Knows the factors of Indian Emigration, and Chinese economic contribution in Southeast Asia. 3) Comprehensive grasp over different cultures and religions in Southeast Asia
3	T 301	TRAVEL AGENCY AND TOUR OPERATIONS MANAGEMENT	2020	<ul style="list-style-type: none"> 1) Students learn about the different political regimes in Southeast Asian nations. 2) Comprehend on the contemporary political and economic conditions in Southeast Asian countries 3) Analyse the reasons to address some of the questions of contemporary world politics
4	T 303	AIRLINE TICKETING AND INFORMATION MANAGEMENT	2020	<ul style="list-style-type: none"> 1) Students acquaint knowledge on Opening of Japan and its early western contacts. 2) Knows Japan's militarization, Russo Japanese war and the First World War 3) Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations.

- 4. Centre for Extension Studies
- 5. Centre for Gandhian Studies
- 6. Centre for Womens Studies

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant document
1.	SVUWS 101	Introduction to Gender Studies	2020	<ul style="list-style-type: none"> Provides unique skills and knowledge to the student's developing ability to identify women's and feminist activities and accomplishments – especially those that have conventionally been neglected -- across a variety of cultures and historical context To pursue a career in counseling by demonstrating how human thoughts and behaviors are influenced by 	
2.	SVUWS 102	Gender & Society	2020	<ul style="list-style-type: none"> Create knowledge on workplace gender and power relations. Provide skill on distribution of power by reinforcing and relying on gender roles. 	
3.	SVUWS 103	Women Movements in National & International Perspective	2020	<ul style="list-style-type: none"> Expose the students to various women's movements at International, National and State levels; Enable students to be aware of the contributions made by women to protect their rights <p>Understand various International developments in feminist thinking</p>	
4.	SVUWS 105(c)	Gender and Education	2020	<ul style="list-style-type: none"> To create an awareness on the status of women's education To appreciate the dimensions of gender education 	
5.	SVUWS 201	Development – Gender Perspectives	2020	<ul style="list-style-type: none"> Understands development, transmission and transformation of ideas and attitudes about women and gender across societies, cultures, and historic periods. Helps to working in Community and Social Services, Administration and Education. 	

6.	SVUWS 203	Computer applications & Software packages	2020	<ul style="list-style-type: none"> • To impart the basic computer knowledge to the students; • To train the students to do their works such as document processing, data entry, data analysis, database Management and accessing Internet by themselves; • To equip students to get necessary computer knowledge to go for self-employment or get wage employment in the age of information revolution 	
7.	SVUWS 204	Policies and Programmes for Women's Development	2020	<ul style="list-style-type: none"> • .To analyse the theoretical basis of Development of Women and Women Empowerment; • To appraise the recommendations of various Committees and Commissions appointed for development of women; • To evaluate the contribution of plethora of women specific development programmes on the development of women and women empowerment in the country 	
8.	SVUWS 205(a)	Media and Governance – Gender Concern	2020	<ul style="list-style-type: none"> • Gender and Media will help prepare students for careers in a number of relevant fields: journalism, media studies, film-making, advertising and marketing, public relations, business and management, social services, public policy, the arts, and many others. • They can analyze gender portrayals, power inequalities in the media and acquire hands-on, technical media skills 	
9.	SVUWS 301	Feminist Theories	2020	<ul style="list-style-type: none"> • To define the concept of Feminism and its evolution over the period of time; • To gain knowledge on theories of feminism and their application to the real world situation; • To understand various streams of Feminism evolved over the period of time 	

1041	SVUWS 303	Internship Cum Seminar Presentation	2020	Get work experer and employability skills	
1142	SVUWS 304(c)	Gender Based Violence – Issues to concerns	2020	<ul style="list-style-type: none"> • To enumerate various types and forms of violence against women; • To make the students to understand the hard realities of the society; • To sensitize students on inhuman practices in the name of culture. 	
1243	SVUWS 305(c)	Gender Perspective and Governance	2020	<ul style="list-style-type: none"> • To impart knowledge to the students on the need for and current status of women's participation in politics and administration; • To identify the factors responsible for abysmally low levels of representation of women in political and governance domains; • To enumerate the interventional measures initiated in India to augment women's representation in politics and governance; • To suggest remedial measures to improve the participation of women in political and governance institutions at national, state and local levels. 	

13 44	SVUWS 402	Women's Legislations – Gender Concerns	2020	<ul style="list-style-type: none"> • To impart knowledge to the students on the need for and current status of women's participation in politics and administration; • To identify the factors responsible for abysmally low levels of representation of women in political and governance domains; • To enumerate the interventional measures initiated in India to augment women's representation in politics and governance; • To suggest remedial measures to improve the participation of women in political and governance institutions at national, state and local levels. 	
14 45	SVUWS 403	Dissertation (Project work)	2020	<ul style="list-style-type: none"> • To expose students to work with the society. • To make them to apply knowledge acquired in class room in practical situations. • To make them to understand with the avenues available and to equip them with necessary skills to be suitable to the demands of the competitive job market 	
15 46	SVUWS 405(a)	Gender and Human Rights	2020	<ul style="list-style-type: none"> • To impart the knowledge to the students on the inalienable aspects of human life viz., Human Rights and their evolution over the period of time; • To enhance the awareness on the international initiatives in ensuring the Human Rights of the people across the globe; • To make the students to understand the Constitutional Guarantees and protective measures on Human Rights and their enforcement agencies in India 	

1647	SVUWS 405(b)	Gender and Communication	Mass	2020	<ul style="list-style-type: none"> • To expose the students on the Feminist Theories of Mass Communication; • To create awareness among students how women are portrayed in movies, television and print media; • To suggest remedial measures to stop the indecent representation of women in mass media. 	
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7. Econometrics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	EMT 101	Microeconomic Theory I	2020	<ul style="list-style-type: none"> • The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. • The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face. • Microeconomics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms. • Microeconomics shows conditions under which free markets lead to desirable allocations. • The fundamental concepts of supply and demand, rational choice, efficiency, opportunity costs, incentives, production, profits, competition, monopoly, externalities, and public goods will help you to understand the world around you. 	

2	EMT 102	Macroeconomic Theory I	2020	<ul style="list-style-type: none"> • Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income, analyse the various income identities with government and international trade, define the concept of green accounting. • Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination. • Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyse the theories of absolute and relative income hypotheses. • Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI. CO5. Illustrate the meaning of interest, analyse the various theories of interest • The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more. The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance. 	
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3	EMT 103	MathematicalMethods	2020	<ul style="list-style-type: none"> • Formulate mathematical models describing the dynamics of economic systems. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations. • Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm. • Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and cost. • Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations. • Students will get to learn applications of mathematical tools to economy. 	
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4	EMT 104	Practical I	2020	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 Able to find Inverse of a Matrix, System of Simultaneous Linear Equations and Cramer's Rule method.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
5	EMT 105	StatisticalMethods	2020	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis.</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 formulate Statistical Methods describing the dynamics of economic systems such as production function analysis and solve econometric analysis of underlying data use with knowledge advanced econometric tools and techniques can solve easily.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
6	EMT 106	HumanValuesandProfessiona IEthics-I	2020	
7	EMT 201	MicroeconomicTheoryII	2020	<p>Course Objectives: The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. The factor prices</p>

8	EMT 202	Macroeconomic Theory II	2020	<p>CO1 The overarching goals of macroeconomics are to maximize the standard of living and achieve stable economic growth</p> <p>CO2 The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more.</p> <p>CO3 The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance.</p> <p>CO4 Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off.</p> <p>CO5 Objectives of Macroeconomic policies – Objectives of Monetary policy. New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.</p>	
9	EMT 203	Basic Econometrics	2020	<p>CO1 Adequate competency in the frontier areas of economic theory and methods.</p> <p>CO2 Formulation and estimation of a multiple regression model.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all models</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	

10	EMT 204	Practical II	2020	<p>CO1 Students can Identify Inter industrial relationships using Input-output analysis,</p> <p>CO2 analyse maximization of profits and minimization of costs can evaluate using Linear Programming,</p> <p>CO3 Analyse relationship of economic variables using simple and multiple regression models which are covered in basic Econometrics</p> <p>CO4 Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance</p> <p>CO5 They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.</p>	
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11	EMT 205	Mathematical Economics	2020	<p>CO1 Students can deal Mathematical calculation of static optimization, Application of Lagrange's method and also student can evaluate Differential Equations and with Economic Applications.</p> <p>CO2 Able to estimate and interpret Inter industrial relationships using Input-output analysis, also analyse maximization of profits and minimization of costs of the firms using Linear Programming method</p> <p>CO3 Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.</p> <p>CO4 Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market model with Stocks</p> <p>CO5 Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.</p>	
12	EMT 206	Human Values and Professional Ethics II	2020		

13	EMT 301	<i>Indian Economy</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources. Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will be aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, Make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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14	EMT 302	<i>Economics of Insurance</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicum in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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15	EMT 303	<i>Advanced Econometrics</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Concepts of Heteroscedasticity & Multicollinearity. Possible reasons behind the presence of Heteroscedasticity & Multicollinearity. Skill to judge the reliability of estimation in case of violation of basic assumptions for the application of ordinary linear regression method.</p> <p>CO2 Concepts of Autocorrelation reasons behind the presence of Heteroscedasticity & Multicollinearity. Describe the variance/covariance matrix for the regression errors under the assumption that the errors are correlated</p> <p>CO3 Apply modern econometric methods covering time series analysis, financial econometrics, microeconometrics, macroeconometrics and structural econometric modelling;</p> <p>CO4 Interpret and critically evaluate applied economics research literature; demonstrate programming skills and numerical methods; and</p> <p>CO5 Apply methods learned to address policy and business decision questions.</p>	
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16	EMT 304	<i>Computer Applications and Data Analysis</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will get basic knowledge of computers i.e., block diagram, evolution of computer, input/output devices, storing information in computer etc.</p> <p>CO2 At the end of this course student will gain Examine spreadsheet concepts and explore the Microsoft Office Excel environment. Import and export data.</p> <p>CO3 Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas. Perform analysis tasks using Data analysis pack</p> <p>CO4 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyses and conclude using SPSS Package</p> <p>CO5 Finally, student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	
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17	EMT 305	<i>Public Finance</i>	2020	<p>.</p> <p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Understand the sources of finance both public and private, demonstrate the role of government to correct market failures and possible advantage of public financing</p> <p>CO2 Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.</p> <p>CO3 Understand the possible burden, benefits and distribution of various types of taxes among various classes of people, know the general trend and impact on general welfare and arouse them to suggest good and bad tax system.</p> <p>CO4 Understand the needs of public borrowing from all possible sources to meet necessary public investment/expenditures. Also be alerted to find sources for repayment</p> <p>CO5 Deliver effectively the preparation of budget and how they are passed in the house. Understand the changes in size and flexibility of state and central budget along with the role played by Finance Commission.</p>	
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18	EMT 306	<i>Financial Institutions and Markets</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2 Effectively narrate the kinds and components of money with its regulatory system, be aware of the functions, objectives and limitations of commercial banks.</p> <p>CO3 Identify the existence and development of non-banking financial institutions, know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.</p> <p>CO4 Understand the conditions of financial markets and its impact in the economy</p> <p>CO5 Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p>	
19	EMT 307	<i>Practical III</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will gain Examine spreadsheet. Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas.</p> <p>CO2 Perform analysis tasks using Data analysis pack using MS-Excel.</p> <p>CO3 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyse and conclude using SPSS Package</p> <p>CO4 Student will able to test of Multicollinearity, Heteroscedasticity and Autocorrelation.</p> <p>CO5 Student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	

20	EMT 308	IntroductiontoEconometrics	2020	<p>CO1 students will have adequate competency in the frontier areas of economic theory and methods</p> <p>CO2 Use basic econometric estimation techniques such as Ordinary Least Squares to estimate bivariate and multivariate regression models.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all model.</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Students will acquire additional specialization topics are estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	
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21	EMT 309	IndianEconomy	2020	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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22	EMT 310	EconomicsofInsurance	2020	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicums in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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23	EMT 401	<i>International Trade and Finance</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Identify the basic difference between inter-regional and international trade, understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>CO2 Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>CO3 Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.</p> <p>CO4 Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.</p> <p>CO5 Be aware of the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.</p>	
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24	EMT 402	<i>Environmental Economics</i>	2020	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Realize the importance and influence of environment on the economy including the quality of manpower. Arouse their feelings to make cleaner environment so as to achieve harmonious development.</p> <p>CO2 Understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries.</p> <p>CO3 Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean.</p> <p>CO4 Understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of resources, careless or unscientific dump/management of wastes.</p> <p>CO5 Suggest appropriate measures to correct environmental degradation, aware of those ingredients such as healthy climate, quality of human beings, domestic and other natural habitats and biodiversity levels, productivity and productions, sustainability, etc are all influenced by environment.</p>
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8. Economics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ECO-101 & 201	Micro Economics Analysis – I & II	2020	<ol style="list-style-type: none"> 1. Graduate Consulting Analyst. Graduate Recruitment Bureau. 2. Economic Consultant (Public Policy). 3. NERA Internship -Industry Research Analyst. Research Fellow.

				4. Graduate Economic Consulting Internship, Economist, Customer Experience Strategy.
2	ECO-102 & 202	Macro Economics Analysis – I & II	2020	1. Work for a central bank of financial institutions. 2. Work as a consultants. 3. work in banking sector.
3	ECO-103&203	Public economics &Federal Finance	2020	1. Assistant commercial Tax Officers. 2. Industrial finance officers. 3. Bill collectors.
4	ECO-104&204	Mathematical Methods in Economics – I and Statistical Methods in Economics	2020	1. Assistant Statistical officers. 2. Bossiness firm consultant. 3. Market research Analyst. 4. Financial analyst. 5. Investment manager. 6. International trade specialist.
5	ECO 105(a)	Fundamentals of Computer	2020	1. Digital Assistants. 2. Office Computer operators.
6.	ECO 105(b)	Urban Economics	2020	1. Senior urban economist. 2. International urban Economist. 3. Senior program Research analyst. 4. Urban environmental impact officer.
7.	ECO 105(c)	Welfare Economics	2020	1. Policy maker. 2. Administrator. 3. Welfare officer in Sachivalyam. 4. Admin in Sachivalayam.
8.	ECO 106(a)	Economics of Environment	2020	1. Environmental pollution officer. 2. Environmental consultants. 3. Environmental pollution planning and consultants. 4. Environmental conservation / Advocacy.
9.	ECO 106(b)	Demography	2020	1. National Sample Survey officers. 2. Census Survey Officers. 3. Chief planning officers.
10.	ECO 107	Human Values and Professional Ethics -I	2020	1. The student will be enriched with several aspects pertaining to Human values and performing of

				<p>Professional Ethics in day today life.</p> <ol style="list-style-type: none"> 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
11	ECO 205(a)	International Trade: Theory and Policy	2020	<ol style="list-style-type: none"> 1. International trading officers. 2. Export and import Officers. 3. Shares consultants. 4. Commercial desk manager. 5. Global trade Advisory.
12	ECO 207	Human Values and Professional Ethics -II	2020	<ol style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	ECO 301	Economics of Growth and Development	2020	<ol style="list-style-type: none"> 1. Project Coordinator. 2. Recreation manager. 3. Programme Director. 4. Social and community manager.
18	ECO 302	Indian Economy	2020	<ol style="list-style-type: none"> 1. NSSO. 2. Economic Survey directors.
19	ECO 304 (a)	International Finance	2020	<ol style="list-style-type: none"> 1. Financial Advisors. 2. Financial officers.
23	ECO 304	Communication and Soft Skills	2020	<ol style="list-style-type: none"> 1. Skill development coordinators. 2. Public relation officers. 3. Marketing and Advertising. 4. Media. 5. Meeting and event planning.

26	ECO 401	Rural Development	2020	<ol style="list-style-type: none"> 1. MGNREGA Programme officers. 2. District Coordinators. 3. Institutional building officers.
27	ECO 402	Financial Institutions and Markets	2020	<ol style="list-style-type: none"> 1. Corporate finance. 2. Financial planning officers.
28	ECO 403 (a)	India's Economic Reforms	2020	<ol style="list-style-type: none"> 1. Planning & Development Officers
29	ECO 404 (c)	Entrepreneurship and Skill Development	2020	<ol style="list-style-type: none"> 1. Business consultant. 2. Research and development. 3. Recruiter. 4. Sales managers.
30	ECO 404 (d)	Labour Economics	2020	<ol style="list-style-type: none"> 1. Labour officers. 2. Labour relations officers. 3. Labour relations assistant. 4. Construction estimators
31	ECO 305 (c)	Economics of Insurance	2020	<ol style="list-style-type: none"> 1. Insurance Agents. 2. Loan processor. 3. Loss control officers. 4. Risk managers.
33	ECO 405 (a)	Human Resource Development	2020	<ol style="list-style-type: none"> 1. Human resource recruiter. 2. Performance management and development. 3. Employees training officers. 4. Organizational development officers.

9. Education

10. English

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
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1)	101:	Poetry-I	2020	<ul style="list-style-type: none"> • An understanding of the evolution of English poetry across ages. • May inspire poetic creativity 	
2)	102:	Drama-I	2020	<ol style="list-style-type: none"> 1. Perceive the nuances of performance 2. Recognize the transformation of human experiences into dramatic experiences. 	
3)		:Fiction-I	2020	<ol style="list-style-type: none"> 1. Aesthetic and literary merits of the novel 2. The conditions of the age and the influence 	
4)	104	:Prose-I	2020	<ol style="list-style-type: none"> 1. Understand the genre of essay 2. Imbibe the deeper human values implied in the essay. 	
5)	106:	Human Values and Professional Ethics-I	2020	<ol style="list-style-type: none"> 1. Realize the necessity of practicing Human values and Ethics in all walks of life including the profession they opt for 2. Understand Bhagvad Gita as a guide for modern lifestyle 	

6)	201	:Poetry-II	2020	<p>Sensitizes the students on the classical and contemporary poetic ethos</p> <p>Raises student awareness on movements like Modernism, War Poetry, Women's poetry, Symbolism etc,</p>	
7)	202	:Drama-II	2020		
8)	203	:Fiction-II	2020	<ol style="list-style-type: none"> 1. The great works of major novelist of modern age 2. The ability to understand the technique of the Novel 	
9)	204	:Prose-II	2020	<p>After the completion of the course the students are able to</p> <ol style="list-style-type: none"> 1. Know the working mechanism of Feminism and socialism 2. Know the mind and strategies of Victorian essayists 3. Know the importance of culture in the lives of Victorian people <p>Know the importance of being human in their dealings with the fellow beings</p>	
10)	205:	English Language Teaching	2020	<ol style="list-style-type: none"> 1. Understand the importance of language lab, teaching materials and audio-visual aids in the learning and teaching of English. 2. Know to test and testing components of language tests and examinations and evaluation procedures 	

11)	301	: Indian English Literature-I	2020	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the merits of Indian English writings and drawbacks if any 	
12)	302:	American Literature-I	2020	<ol style="list-style-type: none"> 1. An idea of English literature in America 2. Familiarity with the literary movements 3. Knowledge about concepts like Puritanism, transcendentalism, symbolism, impressionism etc 	
13)	303:	Literary Criticism-I	2020	<p>Equips the student with the evolution of English Literary Criticism from Aristotle to early twentieth century</p> <p>Helps students map the genealogy of Western canonical critical texts</p>	
14)	304 (A) 304(B): 304 (C): 305 (D):	:Comparative Literature Short Story Women's Writings Indian Literature in English	2020	<ol style="list-style-type: none"> 1. Understand national and world literatures and the need of comparative studies in the global world. 2. Understand the ways of comparative analysis <p>OUT COMES:</p> <p>Perceives creativity as a tool of empowerment and unity amongst women.</p> <p>Understand gendered spaces in creativity and the genealogy of women's writings like Indian, African American, French etc.</p>	

15)	305 (A):	Communicative English	2020	<p>Understand the significance and importance of Communication in English in the present day world</p> <ol style="list-style-type: none"> 1. Understand communication process, the different types and barriers of communication 	
16)	305(B):	English for Media	2020	<ol style="list-style-type: none"> 1. Understand the use of language in different situations in writing for the media 2. Learn the oral skills necessary for media like interview skills 	
17)	05(C):	3An Introductory Course to Literature	2020	<ol style="list-style-type: none"> 3. Understand the use of language in different situations in writing for the media 4. Learn the oral skills necessary for media like interview skills 	
18)	401:	Indian English Literature-II	2020	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the poetic features of Indian English poetry 	

19)	404(A): 404(B): 404(C): 404(D):	Translation: Theory and Practice Subaltern Studies Post-Colonial Literatures World Classics in English Translations	2020	1. Know the concepts of dalitism, feminism, marginalism and Subaltern aspects with relevant theories 2. Appreciate and understand the struggles and sorrows of subalterns	
20)	405(A): 405(B): 405(C):	Soft Skills Indian Literature in English Translation Contemporary Translation Studies	2020	1. Will learn about morals and responsibilities 2. Learn to acquire the enduring values embedded in the great literary works of our writers	

11. Linguistics

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development	
1	101	Language and Linguistics	2020	i.The students are understanding concepts of language modes and semiotic approaches. ii.The student are enriched in structure and concept of language. iii. The student clearly expresses grammatical analysis and linguistics and other fields.	
2	304E	Anthropological Linguistics	2020	I Understanding anthropological linguistics and linguistic anthropology.	

				<ul style="list-style-type: none"> ii. Identify ethnocentrism, ethnography in speaking and language ideology. iii. The students knows language and environment. 	
3	305C	Linguistic Archaeology	2020	<ul style="list-style-type: none"> i.Understanding the definition and scope of linguistic archaeology ii.The student will enrich in basic method of synthesis of evidences of archaeology , linguistics folklore etc., iii. The student will able to explain historical linguistics and archaeology of South Asia. 	
4	404E	Corpus Linguistics	2020	<ul style="list-style-type: none"> i.Understanding the history and scope of corpus linguistics. ii.Gained knowledge in textual and electronic corpora. iii. Familiar with corpus antonation and analysis. 	
5	405C	Machine Translation	2020	<ul style="list-style-type: none"> i.Understanding history and problems of machine translation. ii.The students will able to understand approaches to MT. iii.The students are enriched in requirements for building MT systems and evaluation of MT systems. 	

12. Hindi

13. History

S.	Course Code	Title of the Course	Years of	Activities/Content with direct bearing on
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No.			Introduction	Employability/Entrepreneurship/Skill development
1	HST 101	History of India Up to 650 A D	2020	<ul style="list-style-type: none"> ➤ Students will have a familiarity with the sources, different political, social, economic, cultural and religious traditions of the Indian subcontinent upto 650 C.E. ➤ Student will also be well versed with different analytical approaches and models of interpretation
2	HST 102	History of Indian Polity and Economy, 1206-1757	2020	<ul style="list-style-type: none"> ➤ Students can familiarize in understanding the continuity with changes in all spheres of history, polity and economy under the Delhi sultanates. ➤ Students can understand thoroughly the Mughal conquest of India, their rule, polity and legacy.
3	HST 103	History of Modern India, 1757 – 1947	2020	<ul style="list-style-type: none"> ➤ Student can gain knowledge on the English East India company rule and their reforms.
4	HST 104	History of Modern World, 1900-1945	2020	<ul style="list-style-type: none"> ➤ Student can gain the knowledge on the history and consequences of the World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism. ➤ Students will understand International Relations during 1919-39. ➤ Students can understand thoroughly about the Second World War and its impact.
5	HST 105 (A)	History of Andhra upto 1336 A D	2020	<ul style="list-style-type: none"> ➤ The study of comprehensive history of the country is incomplete without the study of regional history. ➤ Regional history is becoming more and more popular, for it has inherent potential of tapping varied kinds of sources for understanding the divergent aspects of local heritage and culture. ➤ The students can develop thorough understanding on Ancient Andhra history and culture.
6.	HST 105 (B)	History of World Civilizations	2020	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and

				<p>characteristic features of the ancient world Civilizations, its regional extent and variation.</p> <ul style="list-style-type: none"> ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
	HST 106 (A)	Theoretical Concepts of Tourism	2020	<ul style="list-style-type: none"> ➤ Students gain familiarity with the rise and characteristic features of the ancient world Civilizations, its regional extent and variation. ➤ Students can understand the glory of the civilizations, the nature of its cities and material remains and institutions.
7.	HST 106 (B)	History of Medieval World	2020	<ul style="list-style-type: none"> ➤ Student can gain thorough knowledge on the world in medieval ages and rise of Christianity ➤ Will understand Transition to Modern Age ➤ Possess knowledge on French Revolution and its Impact
8.	HST 107	Human Values and Professional Ethics-I.	2020	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large
9.	HST 201	History of India 650-1206 A D	2020	<ul style="list-style-type: none"> ➤ Students can develop comprehensive knowledge on political, social, economic, religious and cultural history of early medieval India , regional polities and its impact ➤ Can also able to understand the circumstances lead to the invasions of Arabs and foundation of Muslim rule in India
10	HST 202	Social and Cultural History of India, 1206-1757	2020	<ul style="list-style-type: none"> ➤ Students can gain comprehensive knowledge on the freedom movement from its inception upto independence in India

				<ul style="list-style-type: none"> ➤ The students can also able to understand the role of national congress and prominent leaders of national movement, problems and perspective in the progress of freedom movement
111	HST 203	Freedom Movement in India, 1857 –1947	2020	<ul style="list-style-type: none"> ➤ The students can understand the Cold War and its Impact ➤ Possess knowledge on UN and the Concept of World Peace ➤ Gain the knowledge on the Disintegration of Socialist Block
12	HST 204	History of Contemporary World, 1945-2000	2020	<ul style="list-style-type: none"> ➤ This course provides comprehensive knowledge on the last imperial political formation in South India and the history of Vijayanagara, Bahmani and contemporary pretty powers. ➤ It helps to understand with the context of polity, economy, culture, religious and ideological changes
13	HST 205	A) History of Vijayanagara Empire B) History of Modern Africa	2020	<ul style="list-style-type: none"> ➤ Students will be familiar with Road to Independence in Africa ➤ They will understand development and underdevelopment in Africa
14	HST 206	A) Historical Application of Tourism in India B) Women Studies in Modern India	2020	<ul style="list-style-type: none"> ➤ The students can familiarize the knowledge needed to excel in tourism activities. ➤ It will equip the students with the solid foundation to build upon the fundamentals, useful skills and expertise that can assist employment in Tourism Industry.
15	HST 207	Human Values and Professional Ethics-II	2020	<ul style="list-style-type: none"> ➤ The student can understand thoroughly the importance of Women Studies ➤ Will understand the role of Women in Hinduism and Islam ➤ Also gain knowledge about the Women participation in various movements in India

14. Human Rights and Social Development

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HR 101	Human Rights: Concepts and Theoretical Perspectives	2020	<ol style="list-style-type: none"> 1. To Expose the students about nature and concept of Human Rights. 2. To apprise the students about the Liberal. Marxian perspectives. 3. To expose the students that alternative, third world and Indian Perspectives of Human Rights,
2.	HR 102	Human Rights in India the constitutional and Legal Framework	2020	<ol style="list-style-type: none"> 1. Students to know the Indian Constitution and Human Rights. 2. To understand the Judiciary and Human Rights. 3. To understand about Criminal Justice system in India.
3.	HR 103	Human Rights and Duties Education	2020	<ol style="list-style-type: none"> 1. To expose students about the importance of Human Rights and Duties education. 2. To apprise the students about the target

				<p>groups for Human Rights</p> <p>To expose the students about the content of Human Rights Education.</p>
4.	HR 104	Rights and the implementation Machinery	2020	<ol style="list-style-type: none"> 1. To expose the students about the implementation machineries at National Level and International Level. 2. The students understand about how the problems in Accessing Justice through Courts and Tribunals. 3. To expose the students that statutory bodies of Human Rights.
5.	HR 105 A	Working Class and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. <i>To understand the students about the status of working class, concept and issues.</i> 2. <i>To expose the student about the basic rights and duties of various sections.</i> 3. <i>To understand the Indian Constitutional Framework.</i>
6.	HR 105 B	Human Rights Education, Teaching and Training	2020	<ol style="list-style-type: none"> 1. To expose the student about the origin, UNO and Human Rights education policies. 2. To apprise the students about the principles and practice in teaching of Human Rights Education. 3. To understand the student about training aspects of Human Rights.
7.	HR 106 A	Human Rights Activism and Role of NGOs	2020	<ol style="list-style-type: none"> 1. To expose the students about the different

				<p>types of Human Rights Activisms.</p> <p>2. To identify the student that the different Types of NGO's and their role for promoting the Human Rights.</p>
8.	HR 106 B	Social Movements and Human Rights in India	2020	<p>1. To expose the students about the role of NGOs for protecting human rights.</p> <p>2. To Understand the student about the Political Movements, Ecological and Environmental Movements of Human Rights.</p> <p>3. To apprise the student about the various types of Social and Political Reforms of Human Rights.</p>
9.	HR 107	Human Values and Professional Ethics - I	2020	<p><i>1. To expose the student about the concept and nature of human values.</i></p> <p><i>2. To understand the student about nature of Values, Ahimsa and various religion theories.</i></p> <p><i>3. To assess the student about various Crime and Theories of punishments</i></p>
10.	HR 201	Human Rights and Indian Polity	2020	<p>1. To expose the students about the concept of basic structure of Indian Polity, administrative structure in India.</p> <p>2. To apprise the student about the role of People's Agencies for protecting and promotion of human rights in India.</p>

				<ol style="list-style-type: none"> 3. To understand the students about the Legislative Procedure and implementation process in India.
11.	HR 202	Emerging Dimensions of Human Rights	2020	<ol style="list-style-type: none"> 1. To expose the students about the Human Rights and Duties of Non-State Armed Groups and Commercial Corporations. 2. To understand the students about the rights of future generation. 3. To apprise the students about the Human Rights and Changing Dimension of State Sovereignty and Humanitarian' Intervention.
12.	HR 203	Human Rights: The International Context	2020	<ol style="list-style-type: none"> 1. To understand the students about the evolution of human rights and UN charter of human rights. 2. To expose the students about regional dimensions of human rights and special conventions on human rights. 3. To understand the students about International conventions on human rights and duties.
13.	HR 204	Research Methodology, Statics and Computer Applications	2020	<ol style="list-style-type: none"> 1) Student to Know Scope of Social Research. 2) To Understand Data Analysis. 3) Understand About Types of Data Collections
14.	HR 205 A	Human Rights – The Socio Economic Context	2020	<ol style="list-style-type: none"> 1. To expose the students about the socio, economic background of human rights.

				<ol style="list-style-type: none"> 2. To apprise the students about human rights of vulnerable groups. 3. To understand the students about the basic human need for development with respect to human rights.
15.	HR 205 B	Societal Problems of Human Rights in India	2020	<ol style="list-style-type: none"> 1. To understand the student about the societal problems of human rights. 2. To understand the students about the social problems of minorities, scheduled caste and scheduled tribes. 3. To expose the students about Regionalism, terrorism.
16.	HR 206 A	Human Rights and Criminal Justice System	2020	<ol style="list-style-type: none"> 1. To expose the students about Rights of Inmates of Prisons and Custodial Homes. 2. To understand the students about the Right to Legal Aid, Access to Justice and Speedy Justice. 3. To expose the students that the problems of human rights.
17.	HR 207	Human Values and Professional Ethics - II	2020	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i>

				<p>3. <i>To assess the student about various Crime and Theories of punishments.</i></p>
18.	HR 301	Social Movements and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To expose the student about conceptual perspectives of social movements and human rights. 2. To apprise the students about the social, political and religious reforms movements and human rights. 3. To expose the students that the role of International and National Institutions in promoting Human Rights.
19.	HR 302	Science, Technology, Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. Understand the basic concept in science and technology and also about Indian perspective on science and technology. 2. Ability to know about the Right to Adequate Food, Agricultural, Biotechnology Impact of on Agriculture, Food Biotechnology and Revolution in Information Technology. 3. Analyse know rights to health and application of Biotechnology in Medicine and also about Intellectual Property Rights.

				4. Assess the use of natural resource Environmental Biotechnology and Use Technologies
20.	HR 303 A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2020	<ol style="list-style-type: none"> 1. To understand the students that the issues for peoples movements and public advocacy on human rights and duties 2. To understand the students on extension work with respect to human rights. 3. To understand the students about the uses of NGOs fact finding and uses of information media.
21.	HR 303 B	Socially/Economically Disadvantaged people and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To expose the students about the concept of the Constitutional Safeguards and Special Protection Laws and Policies. 2. To understand the students about the concept of the disadvantaged people in the Indian Society. 3. To understand the students about the Institutional Mechanisms for protecting the human rights of the disadvantaged groups.
22.	HR 303 C	Human Duties and Responsibilities	2020	<ol style="list-style-type: none"> 1. To understand the student about the concept of human duties and

				<p>responsibilities.</p> <ol style="list-style-type: none"> 2. To expose the student about human values and values of humanism. 3. To apprise the students about evaluation of human duties.
23.	HR 303 D	Children and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To understand the student about the concepts of Child Labour and protecting norms at National and International level. 2. To apprise the student that the status of children in Indian society with respect to human rights. 3. To understand the students about the National and International mechanisms for protecting the child rights.
24.	HR 304	Soft Skills	2020	<ol style="list-style-type: none"> 1. To understand the student that the concepts of soft skills with respect to human rights. 2. To understand the student in employability skills in human rights aspects. 3. To expose the students that the professional skills for team building and problem solving.
25.	HR 305 A	Historical and Philosophical Perspectives of Human Rights	2020	<ol style="list-style-type: none"> 1. To expose the student that the a basic understanding to the concepts of human rights, human values, dignity, justice and equality. 2. To understand the students that the

				<p>theories of human rights in various inter disciplinary dimensions.</p> <p>3. To apprise the student that the concept of Magna Carta-Bill of Right-French and American- Declaration and Uncharted on human rights.</p>
26.	HR 305 B	Human Rights and Duties in India	2020	<ol style="list-style-type: none"> 1. To understand the students about the concepts of Constitutional Human Rights and Responsibilities. 2. To apprise the students that Extra-ordinary situations and human rights in India. 3. To understand the violations of rights in present Civil Society in India.
27.	HR 401	Human Rights in Andhra Pradesh	2020	<ol style="list-style-type: none"> 1. To expose the students about various Human Rights Movements at National and State Andhra Pradesh) Level. 2. To understand the concept of social stratification and problems of Caste and Un-touchability. 3. To expose the students that the gender inequality and various gender violation in Andhra Pradesh.
28.	HR 402	Development, Trade and Human Rights	2020	<ol style="list-style-type: none"> 1. To understand the student about the concept of human rights of various vulnerable groups ath National and International level. 2. To apprise the student about the Trade related human rights violations and Trade development.

				<ol style="list-style-type: none"> 3. To understand the student about the role of human rights in development.
29.	HR 403 A	International, Humanitarian and Refugee Laws	2020	<ol style="list-style-type: none"> 1. To expose the students about the concepts of International Humanitarian Law and Implementation enforcements of IHL. 2. To apprise the student about the concept of International Refugee Law and protection under International Law. 3. To understand the students about solution to Refugee Problem.
30.	HR 403 B	Environment and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To expose the student about the concept of Environment and rights to clean environment. 2. To apprise the students about the International regimes for protection. 3. To understand the students about the role of various agencies for protecting environment with respect to human rights.
31.	HR 403 C	Human Rights and Criminal Justice System	2020	<ol style="list-style-type: none"> 1. To expose the student about the concept of the International Human Rights systems. 2. To understand the student about the International Organisations for protecting the Human Rights. 3. To understand the students about the UN Organs and Human Rights.
32.	HR 403 D	Minorities and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To student understand that the concept of

				<p>evolutionary perspectives and Institutional mechanisms for protection of Minorities.</p> <p>2. To expose the student that rights and duties of Minorities under in the Indian System.</p> <p>3. To apprise the student that the Minorities and human rights challenges.</p>
33.	HR 405 A	Development, Globalization and Human Rights	2020	<ol style="list-style-type: none"> 1. Understand to role of Human Rights in Development and various theories of development. 2. Analyses the new international Economic Order (NIEO),WTO GATT and International Trade and Human Rights Perspective in India. 3. Evaluvate the Globalisation and its impact on agriculture, environment, labour, women, culture and health. 4. Know about the Transnational Corporations (TNCs) and

				Human Rights violations and Impact of GATT-WTO on sovereignty.
34.	HR 405 B	Women and Human Rights and Duties	2020	<ol style="list-style-type: none"> 1. To expose the students about the concept or the status of women in various sectors with respective human rights. 2. To expose students about the National and International norms for protection at International and National level. 3. To apprise the students about the Institutional mechanisms for Protection of rights of women.

Human Rights and Duties

S.No	Programme Name	Programme Code	Course Name	Course Code	Year of Introduction	Description of the course addressing Professional Ethics
1	Human Rights and Duties	161	Human Values and Professional Ethics-I.	HR -106	2020	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness

						of human beings and society at large.
2	HR -205	161	Human Values and Professional Ethics-II	HR -205	2020	<ul style="list-style-type: none"> ➤ Students can understand the need and importance of human values and professional ethics which are essential for positive human behavior and actions in our daily lives. ➤ They inspire the fundamental goodness of human beings and society at large.

15. Law

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CO -101	Mass Media Law	2020	<ul style="list-style-type: none"> a. Have a detailed and sophisticated understanding of the general principles governing freedom of speech, the public interest and the media; b. Have a detailed, technical and specialised understanding of the constraints imposed on the media in the reporting of court proceedings; c. Have developed the ability to independently understand, research and critically analyse legal and scholarly developments that contribute to professional practice in the area of media law; and d. Have a detailed, technical and specialised understanding of defamation law in India and comparatively;

				e. Have developed expert knowledge of the practical operation of defamation law in India and comparatively;
2	CO-102	Public Utilities Law	2020	<ul style="list-style-type: none"> a. government policy in regard to such utilities in general and to each utility in particular, b. The growth and evolution of the public utilities; c. patters of the laws of incorporation and d. powers, functions and liabilities of the public utilities vis-a-vis their employees, consumers and others.
3	CO- 103	Law and Social Transformation in India	2020	<ul style="list-style-type: none"> a. Critically analyse the Law as an instrument of social change and product of tradition and culture b. Explore the nature and function of Law as an institution and process interlinked with the social and economical philosophy of education. c. Examine development of law from historical processes and how for the a touch of modernization and value can be added to legal system d. To analyse the different approaches of Law and Justice
4	CO - 104	Indian Constitutional Law: The New Challenges	2020	<ul style="list-style-type: none"> a. Understand and interpret Constitution to address the emerging complex issues; b. Explore the various functional theories, doctrine and Constitutional principles working in the backdrop and its interplay with the emerging issues; and c. Examine the boundaries, limitations, of Constitution from different perspectives and explore the possible approaches of interpretation and understanding from the perspective of Law and Justice.
5	CO - 201	Union – State Finance	2020	<ul style="list-style-type: none"> a. To understand India as development of complex

		Relations		<p>federal structure (Quasi) federal and its strength and weaknesses;</p> <p>b. Explore the various functional theories, doctrine and Constitutional principles of federalism and its interplay under Indian Constitution; and</p> <p>c. To examine the area of conflicting interest between Union and State and primacy of Union over the State.</p>
6	CO - 202	Constitutionalism, Pluralism and Federalism	2020	<p>a. To explore the basic principles of Constitutionalism, different model of federalism and its interplay in the Indian legal system;</p> <p>b. To examine the adoption of, utility and justification of Constitutional model in India; and</p> <p>c. To analyse India as pluralist society and suitability of various model, approaches in India in functional aspects of comparison with other legal system.</p>
7	CO – 203	Judicial Process	2020	<p>a. Intended to highlight the role of court as policy maker, participant in the power process and as an instrument of social change.</p> <p>b. expose the intricacies of judicial creativity and the judicial tools and techniques employed in the process.</p> <p>c. Since the ultimate aim of any legal process or system is pursuit of justice, a systematic study of the concept of justice and its various theoretical foundations is required.</p> <p>d. Intends to familiarise the students with various theories, different aspects and alternative ways, of attaining justice.</p>
8	CO – 204	Legal Education and Research Methodology	2020	<p>a. Critically analyse the various research skill, especially in the field of law;</p> <p>b. To develop the skill of application of teaching</p>

				<p>methods in legal education</p> <p>c. To understand and analyse the various strength and weakness of teaching learning and research process for the field of law; and</p> <p>d. To develop the skill of utilising computer technology for Legal education and Legal research.</p>
9	CO – 301	Human Rights	2020	<p>a. Acknowledge the social and economic rights of workers, forced labour, child labour, bonded labour, slavery, trade union, social security, right to health, standard of living, protection of families etc.</p> <p>b. To gain and acquire the knowledge about cultural rights of indigenous population.</p> <p>c. Understand the third-generation solidarity right of various populations.</p> <p>d. Acknowledge the ideas and knowledge about Human right Protection system of United Nations in the light of Covenant of Civil and Political rights.</p>
10	CO – 302	National Security, Public Order and Rule of Law	2020	<p>a. Understand and interpret various provision and safeguards to protection national security;</p> <p>b. To explore the various approach of public order, importance of rule of law and different legislations;</p> <p>c. Balancing the civil liberties and power of state; and</p> <p>d. Explore the various functional institution like election commission, parliament and check and balance on the national importance.</p>
11	CO- 303	Practical Training	2020	<p>a. Critically apply the understanding and application of legal research principles to legal research writing;</p> <p>b. To explore the various stages and its application for the practical record work;</p> <p>c. To have the development of idea, and its application;</p>

				<ul style="list-style-type: none"> d. To have the ability to provide the original and non-plagiarised work to the existing field of knowledge e. Legal aid Camps and Legal Literacy Programmes, Court Observation work. f. On the completion of the course students will develop an inclination towards research and academics.
12	CO- 304a	Environment Protection and The Law	2020	<ul style="list-style-type: none"> a. Study the relationship between environment and climate change as well as the role of law, judiciary, resolution mechanisms but the alternate energy solutions and how people are dealing with climate changes, environmental laws and implementation of available solutions.
13	CO- 304b	Intellectual Property Rights Law	2020	<ul style="list-style-type: none"> a. To give philosophical underpinnings of traditional notion of property and IP • b. To examine the link between Industrial development & IP protection • To examine the conceptual development of IP concepts through judicial approach • c. To examine the impact of IP on economy, health and daily activities • d. To understand the basic principles enunciated in international agreements relating to IP
14	CO- 401	Dissertation and Viva-Voce	2020	<ul style="list-style-type: none"> a. Identify key research questions within the field of Demography on which you will carry out independent research. b. Manage your time effectively whilst working on your independent research. c. Demonstrate appropriate referencing and develop skills in other aspects of academic writing. d. Demonstrate knowledge and understanding of report writing.

				e. Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research
15	CO – 402a	Law of Consumer Protection	2020	<ul style="list-style-type: none"> a. Define provision under the Consumer Protection and Right to Information Act and apply them to situations accordingly b. Draft a consumer complaint with ease c. Confidently approach a Consumer Forum and get aware of the redressal mechanism d. To expose the students about Consumer Protection Laws; e. To develop the conceptual understanding of Consumer Protection regime.
16	CO- 404 b	International Human Rights (MOOC / ONLINE COURSE)	2020	<ul style="list-style-type: none"> a. Analyze and comment on key controversies surrounding the development of international human rights law b. Use conceptual tools to follow the developments of human rights law c. Be most effective in contributing to the enforcement of international human rights law

16. Library and Information Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	LIS-101	Foundation of Library and Information Science	2020	<ul style="list-style-type: none"> 1. Know the various types of libraries and their role in the society 2. Learn the Professional ethics and library

				<p>Legislation in India</p> <p>3. Understand LIS education in India and various library associations in India</p>
2	LIS102	Knowledge Organization:Classification Theory	2020	<p>1.. Understand the definition, need and purpose of classification</p> <p>2. Learn the Fundamental Categories, Facet Analysis, types of Isolates in all schemes of classification</p> <p>3. Understand the Notation, trends and developments in Classification</p>
3	LIS-103P	Knowledge Organization:Classification Practice	2020	<p>1.Learn the Dewey Decimal Classification Scheme</p> <p>2. Get the skill regarding assigning the class numbers</p> <p>3.Have knowledge on Tables and Schedules of DDC</p>
4	LIS-104	Knowledge Management	2020	<p>1.Get an idea on the concepts of knowledge management, types of knowledge</p> <p>2.Understand the knowledge creation models, knowledge transfer in E-World</p> <p>3.know the tools for knowledge management and neural network and datamining</p>
5	LIS-105	Introduction to Information Technology	2020	<p>1.Gain knowledge on the concepts of computer</p>

				<p>basics and Network technologies</p> <p>2.Understand the concepts of Operating Systems, Programming Languages and types of softwares</p> <p>3.Learn the Database Management systems, steps in development of databases and get an idea on different library software packages</p>
6.	LIS-106	Human Values and Professional Ethics-I	2020	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
7.	LIS-201	Information Sources and Services	2020	<p>1.Learn documentary and non-documentary sources and different types of information sources</p> <p>2.Know about the Indian and British National Bibliographies, and Electronic Books</p> <p>3.Understand the virtual reference service and translation Services</p>

8.	LIS-202	Knowledge Organization: cataloguing Theory	2020	<p>1.Understand the basic ideas on catalogue, forms of the catalogue, Main Entry and added entries</p> <p>2. Know the Canons, Principles and Laws of Cataloguing</p> <p>3.Gain the knowledge on different types of subject headings, Cooperative and Centralized cataloguing</p>
9.	LIS-203P	Knowledge Organization: cataloguing Practice	2020	<p>1.Gain knowledge on Anglo American Cataloguing Rules</p> <p>2.Learn the preparation of Main entry and added entries for monographs and serial publications</p> <p>3. Gain the skills on preparation of entries on cartographic materials, manuscripts and sound recordings</p>
10.	LIS-204P	Meta data Standards- Practice	2020	<p>1.Know the Metadata and its types, standards</p> <p>2. Learn the skills on KOHA Software</p> <p>3.Learn the skills on MARC 21 and Dublincore</p>
11	LIS-205	Library Management	2020	<p>1.Gain knowledge on meaning and purpose of management, Organizational Structures</p> <p>2.Able to identify the factors behind selection, procurement and accessioning of documents</p> <p>3.Gain knowledge on a circulation system suitable for a library, different budgetary methods and its standards, norms and principles</p>
12	LIS-206	Human Values and Professional Ethics-II	2020	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p>

				<p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	LIS-301	Information Processing and Retrieval Theory	2020	<p>1.Understand the basic concepts on Information procession and Retrieval and various schemes on classification</p> <p>2.Learn the Indexing Systems and Techniques and their Evaluation Criteria and Studies</p> <p>3.Gain knowledge on Web based Information Retrieval Systems</p>
14	LIS-302	Library Automation and Digital Library	2020	<p>1.Learn the basics of Library Automation, various modules of library automation software packages and their features</p> <p>2.Gain knowledge on basic concepts and characteristics of digital libraries</p> <p>3.Know about network and communication devices, digitization and metadata</p>
15	LIS-303	Search and Search strategies	2020	<p>1.Gain knowledge on search strategies, various types of databases, internet searching tools</p> <p>2.Understand Z39.50 protocol and Wide area information servers</p> <p>3. 3.Learn the search engines and meta search engines.</p>
16	LIS-304B	Internship	2020	<p>1.Attain skills on all types of sections and its maintenance in libraries in which they underwent training</p> <p>2.Get skills on maintenance of Digital Library</p> <p>3.Learn the skills on preservation and</p>

				conservation of manuscripts and digitization.
17	LIS-304C	Academic Library System	2020	<p>1.Know the basic objectives, growth and development of Academic Libraries in India, UK and USA</p> <p>2.Learn about an overview of higher education in India, UGC, its powers and functions and its role in the development of academic libraries</p> <p>3.Understand the total design of the building, techniques of financial management, and know the organization of library and information services needed by distance learners and special users</p>
18	LIS-305A	Information Literacy (OE)	2020	<p>1.Learn the concepts of Information Literacy and sources of Print and Electronic Information</p> <p>2.Get the skills on information access through INFLIBNET Network</p> <p>3.Able to understand the Internet and its search techniques and Intellectual Property Right</p>
19	LIS-401	Research Methodology	2020	<p>1.Understand the definition, need and purpose of various research methods</p> <p>2.Get the knowledge on Research design, techniques and tools</p> <p>3.Gain the skills on Data analysis and Interpretation of Data in SPSS.</p>
20	LIS-402P	Software for Libraries-Practice	2020	<p>1.Attain knowledge on D Space, Greenstone Digital Library Softwares</p> <p>2.Learn about Koha : Library Management Software, E-Resources, Directory of Open Access Journals,</p> <p>3.Get an idea on designing of Web Page and Data Mining</p>
21	LIS-403	Dissertation/Project Work	2020	1.Gain Knowledge on how to select the theme for

				<p>their work</p> <p>2.Learn the writing styles, preparation of questionnaire, data analysis and interpretation and Citation styles</p> <p>3.Get the skills on findings and conclusion in dissertation</p>
22	LIS-403A	Management of Information System	2020	<p>1.Know the basic concepts in Management, and various methods of decision-making and its application to Library and Information Centers</p> <p>2.Understand the budgeting techniques and methods and policies and procedures</p> <p>3.Gain knowledge on system analysis, PERT/CPM</p>
23	LIS -404C	Information Processing and Retrieval: UDC and Indexing Practice	2020	<p>1.Gain knowledge on Universal Decimal Classification</p> <p>2.Learn different Indexing systems</p> <p>3.Understand the design and development of thesaurus</p>
24	LIS-405-B	Technical Writing	2020	<p>1.Know the definition and types of technical writing</p> <p>2.Attain the idea on technical writing process and styles</p> <p>3.Get the skills on technical writing techniques, use of MS-Office for preparation and presentation of technical writing</p>

17. Mass Communication & Journalism

18. Performing Arts(Music)

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
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1	162	MA Performing Arts(Music)	2020	PAM-105 (P) Compulsory Foundation in Music -1 Clear cut training of foundation in Carnatic Music	Proof Enclosed
2	162	MA Performing Arts(Music)	2020	PA-M 204 (P) Vilambakala Kritis Training to Perform slow tempo songs which is difficult rather than fast tempo songs	Proof Enclosed
3	162	MA Performing Arts(Music)	2020	PA-M 205 (p) Compulsory Foundation in Music -2 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
4	162	MA Performing Arts(Music)	2020	PA-M 302 Compositions in Rare ragas widening knowledge to perform rare ragas	Proof Enclosed
5	162	MA Performing Arts(Music)	2020	PA-M 303 Concert Ability to plan and execute a successful Carnatic concert Ability to create self employment opportunity	Proof Enclosed
6	162	MA Performing Arts(Music)	2020	PA-M 402 Ragam Tanam Pallavi Learn and inculcate the most creative part of Carnatic Music To help student to shape out the creative rendering style of the student	Proof Enclosed
7	162	MA Performing Arts(Music)	2020	PA-M 403 Project work Introduce to the methodology of doing research in music and introducing to data collection, analysis etc and train up him to look into the facts based on evidences	Proof Enclosed
8	162	MA Performing Arts(Music)	2020	PA-M 404A Manodharma Sangeetha To enrich the knowledge of innovative music To educate the student to sing raga alapana neraval and Kalpanaswara which are the crucial Sections of creative music.	Proof Enclosed
9	162	MA Performing Arts(Music)	2020	PA-M 404C Compositions of Dance Repertoire Knowledge in application of music in other art fields like theatre, opera etc Knowledge to select and utilize ragas according to the theme and text.	Proof Enclosed

19. Philosophy

16.philosophy					
S.	Course Code	Title of the Course	Years of	Activities/Content	with direct bearing on


No.			Introduction	Employability/Entrepreneurship/Skill development
35.	101	Classical Indian Philosophy	2020	<p>1.The Student has applied the knowledge of classical Indian Philosophy.</p> <p>2.The Student has analyzed the principles of classical Indian Philosophy</p>
36.	102	Epistemology Indian	2020	<p>1. The Student has known the Indian Epistemology</p> <p>2. The Student has understood the Pramanas in Indian Philosophy</p>
37.	103	Logic Indian and Western	2020	<p>1. The Student has known the Indian Epistemology</p> <p>2. The Student has understood the Pramanas in Indian Philosophy</p>
38.	104	Western Philosophy- Greek and Medieval	2020	<p>1.The Student has known the important issues of Western Philosophy</p> <p>2. The Student has understood the Principles of greek and medieval Philosophy</p>
39.	105-A	Problems in Metaphysics	2020	<p>1. The Student has known the Problems of Metaphysics</p> <p>2. The Student has understood the Principles of Metaphysics</p>

40.	202	Ethics- Indian	2020	<p>1. The Student has known the Ethics in Indian Philosophy</p> <p>2. The Student has understood the various Ethical Principles in Indian Ethics.</p>
41.	203	Ethics –Western	2020	<p>1. The Student has known the Ethics in Western Philosophy</p> <p>2. The Student has understood the Ethical theories of Western Philosophy</p>
42.	204	Modern Western Philosophy	2020	<p>1. The Student has known the Problems of Modern Western Philosophy</p> <p>2. The Student has understood the thoughts of Modern Western Philosophers.</p>
43.	205-A	Philosophy of Education	2020	<p>1. The Student has known the Contents of Philosophy of Education.</p> <p>2. The Student has understood the Educational aspects of Philosophy of Education</p>
44.	207	Audit course (HVPE)	2020	<p>1. The Student has known the essence contents of human values.</p> <p>2. The Student has understood the Professional Ethics..</p>
45.	301	Social and Political Philosophy	2020	<p>1. The Student has known the contents of social Philosophy.</p> <p>2. The Student has understood the Principles of Political Philosophy.</p>
46.	302	Philosophy of Vedanta	2020	<p>1 . The Student has known the Philosophy of Vedanta.</p> <p>2. The Student has understood the Philosophical</p>

				Doctrines of Vedantas
47.	303-A	Philosophical Approach to Gandhi	2020	<p>1. The Student has known the metaphysical issues of Gandhi.</p> <p>2. The Student has understood the Gandhian Philosophy</p>
48.	303-B	Philosophy of B.R.Ambedkar	2020	<p>1. The Student has analyzed the Philosophy of Ambedkar..</p> <p>2. The Student has applied the Philosophical aspects of Ambedkar.</p>
49.	305-A	Philosophy of Value Education	2020	<p>1.The Student has known the importance of Education...</p> <p>2. The Student has understood the Philosophical values for life.</p>
50.	305-B	Sri Venkateswara Studies	2020	
51.	401	Phenomenology and Existentialism	2020	<p>1. The Student has analyzed the contents of Phenomenology..</p> <p>2. The Student has applied the Philosophical Principles of Existentialism</p>
52.	402	Comparative Religion	2020	<p>a.The Student has analyzed the aspects of Comparative Religion..</p> <p>b. The Student has applied the Philosophical Principles of different Religions</p>
53.	403-A	Philosophy of Jiddu Krishnamurti	2020	<p>1.The Student has known the Philosophy of Jiddu Krishnamurti...</p> <p>2. The Student has understood the Philosophical insights and of jiddu Krishnamurti</p>

54.	403-B	Analytical Philosophy	2020	<p>1. The Student has known the contents of Analytical Philosophy.</p> <p>2. The Student has understood the Philosophy of Philosophers of Analytical Philosophy..</p>
55.	403-C	Sri Vaishnavism	2020	<p>1.The Student has analyzed the aspects of SriVaishnavism..</p> <p>2. The Student has applied the Philosophical Principles of .SriVaishvaism</p>
56.	403-D	Research Methodology and Computer Applications	2020	<p>1.The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer operating and applying principles</p>
57.	404	Philosophy of Peace	2020	
58.	405-A	Philosophy of Yoga	2020	<p>1.The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer operating and applying principles</p>

20. Physical Education

S.No	Name of the Course	Course Code	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
1	B.P.Ed	Bachelor of Physical Education	2014-15	100%	 B.P.Ed students employibility .pdf

2	Ph.D	Ph.D	2008	100%	
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21. Political Science & Public Administration

22. Population Studies

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	PS- 101	Population Characteristics and Theories	2020	<ul style="list-style-type: none"> i. Identify basic demographic concepts and definitions in Population studies ii. Impart knowledge on Population trends in size and growth of population at regional, national and global level. iii. Discover the implications of different theories on past and present population components with special reference to Malthusian theory
2.	PS - 102	Fertility	2020	<ul style="list-style-type: none"> i. Examine the basic concepts and measurements of fertility ii. Assess, compare and contrast trends in fertility and its determinants iii. Familiarize the concepts of nuptiality and factors affecting nuptiality
3.	PS – 103	Mortality	2020	<ul style="list-style-type: none"> i. identify the various concepts and measures of mortality ii. Examine the global levels and trends in mortality and its determinants iii. Acquire knowledge on techniques of life tables, constructions of multiple-decrement life table and computational aspects for demographical analysis
4.	PS 104	Sources, Evaluation and Adjustment of Data	2020	<ul style="list-style-type: none"> i. Examine and compare merits and demerits of various sources of population data ii. Understand the evaluation of data, factors

				<ul style="list-style-type: none"> iii. affecting completeness of data iii. Reproduce knowledge on population projections, calculations and applications
5.	PS – 105	Population Education and Extension	2020	<ul style="list-style-type: none"> i. Examine the components of population education and create awareness on population education among the students and youth ii. Acquire skills to organize Extension Programmes in population education at school, college and Non formal educational levels iii. demonstrate training on population education methods and techniques in order to create awareness on population education
6.	PS - 106	Human Values and Professional Ethics-I	2020	<ul style="list-style-type: none"> i. Identify the concepts of ethics and its relation to religion, politics and environment ii. Memorize the different aspect of values and interpret the best skills in understanding the merits of value related aspects iii. Demonstrate to interpret crime and theories of punishment with special reference to acquire knowledge on Manu and Yajnavalkya
7.	PS – 201	Migration and Multi Regional Demography	2020	<ul style="list-style-type: none"> i. Explore the different types and trends in migration ii. Apply skills in measurement, causes and consequences of different migrations in different regions iii. Explore the theories and recommend suitable policies of migration
8.	PS – 202	N.G.O Management & Field Work Orientation	2020	<ul style="list-style-type: none"> i. Understand the role, importance and establishing of NGO ii. Explore the sources of funding of NGO's at national and international level iii. Explore demographic data by working with individuals, groups and communities

9.	PS - 203	Statistical Methods	2020	<ul style="list-style-type: none"> i. Familiarize the basic statistical methods and its applications to demographic data ii. Demonstrate knowledge on methods and techniques of sampling iii. Acquire skills in processing of data with computer
10.	PS - 204	Population Sociology	2020	<ul style="list-style-type: none"> i. Examine the basic sociological concepts, and evaluate the relationship of sociology to other social sciences ii. Identify the social institutions, social change and socialization iii. Explore the sociological theories of fertility and its application in contemporary society
11.	PS - 205	Fundamentals of Social Work	2020	<ul style="list-style-type: none"> i. Memorize the basic concepts of social work and its nature and scope. ii. Recognize the different methods of social work iii. Explore the social work practice in different fields iv. Acquire knowledge on the evolution of social work in India v. Explore the professional associations and importance of networking in social work profession
12.	PS – 206	Human Values and Professional Ethics - II	2020	<ul style="list-style-type: none"> i. Acquire and gain knowledge on different concepts of human values and behavioural changes. ii. Recognizing the medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics of medical and health care professionals. iii. Acquire skills on environmental ethics and its relation to Health
13.	PS - 301	Population Geography	2020	<ul style="list-style-type: none"> i. Enumerate the geographical factors affecting the distribution of population ii. Awareness and understanding of trends in

				<p>urbanization and its impact on ecological imbalance, global warming, greenhouse effects.</p> <p>iii. Able to assess changing pattern of land use, conservation of resources and critical thinking of policies, programmes for better management of environment</p>
14.	PS - 302	Research Methodology	2020	<p>i. Demonstrate in conducting population research and surveys</p> <p>ii. Prepare research design and apply sampling techniques</p> <p>iii. Discover skills in methods and tools of data collection, data analysis, interpretation, and report writing.</p>
15.	PS - 303	Community Health	2020	<p>i. Discover comprehensive knowledge on concepts of community health, illness, disease prevention</p> <p>ii. Critical thinking on epidemiology, communicable diseases and its prevention</p> <p>iii. Understand and appreciate the concepts of health, nutrition, balance diet, nutrition deficiency diseases and National Health Programmes</p>
16.	PS – 304 a	Population Psychology	2020	<p>i. Appreciate the scope of psychology and the relationship between value of children and fertility</p> <p>ii. Familiarize and comprehend the significant psychological theories relevant to fertility and contraceptive behavior</p> <p>iii. Demonstrate leadership and effective communication skills in promoting health and family planning</p>
17.	PS – 304 b	Population Policies and Programmes	2020	<p>i. Explore population policies related to fertility, mortality and migration</p> <p>ii. Acquire the knowledge on methods of family planning and acts relating to medical termination</p>

				<p>of pregnancy, age at marriage and also registration of vital events</p> <p>iii. Apply best practices and strategies for promoting family welfare programme.</p>
18.	PS – 304 c	Gerontology	2020	<p>i. Understand the scope of gerontology and demographic dimensions of the elderly</p> <p>ii. Critically explore and analyze changes in status of elderly health, problems and needs of elderly</p> <p>iii. Acquire skills in dealing elderly issues like neglect, abuse, violence and abandonment caregivers stress and elderly neglect</p>
19.	PS – 304 d	Population and Sustainable Development	2020	<p>i. Examine the concepts and theoretical issues relating to sustainable development and sustainable goals</p> <p>ii. Assess and measure the quality of life, resource creation, and management and distribution</p> <p>iii. Critically think of the relationship between population, environment, poverty and population sustainable growth</p>
20.	PS-305 a	Principles of Population Studies	2020	<p>i. Explore the components of population change, trends in size and growth of population</p> <p>ii. Discover the concepts of fertility, mortality and migration</p> <p>iii. Acquire skills in exploring the sources and quality of data on fertility, mortality and migration</p>
21.	PS – 305 b	Population, Society and Environment	2020	<p>i. Understand the components of population change and sociological consequences</p> <p>ii. Demonstrate sociological perspective to analyze the relationship between man, ecology and environment</p> <p>iii. Critical thinking of Sustainable development and its concepts</p>
22.	PS - 401	Communication for Family	2020	<p>i. Examine the elements in communication process</p>

		Welfare Programmes		<ul style="list-style-type: none"> ii. Understand and apply different approaches to communication iii. Critically analyze and apply factors influencing a various communication methods to promote family planning
23.	PS – 402	Reproduce Health and Adolescent Issues	2020	<ul style="list-style-type: none"> i. Examine the anatomy and physiology of human reproduction, conception and pregnancy ii. Describe the male and female reproductive health problems iii. Assess and examine various adolescent issues
24.	PS - 403	Population Growth and Development	2020	<ul style="list-style-type: none"> i. Understand the indicators of development with special reference to population growth and development. ii. Discover the concepts of economic inequality and its causes iii. Examine the status of women and development and demographic consequence of women empowerment
25.	PS – 404 a	Dissertation	2020	<ul style="list-style-type: none"> i. Develop in-depth knowledge of field work and community surveys ii. Acquire the skills to present and discuss the findings through seminars iii. Explore the skills in preparation and presentation of research findings
26.	PS – 404 b	Demography of Andhra Pradesh	2020	<ul style="list-style-type: none"> i. Acquire knowledge on basic trends and changes in population growth in Andhra Pradesh ii. Examine the migration and urbanization, problems of slums and related policies with special reference to Andhra Pradesh iii. Explore the population policies and programmes in Andhra Pradesh
27.	PS – 404 c	Social Work in Industry and	2020	<ul style="list-style-type: none"> i. Understand the concepts, principles and functions

		Human resource Management		<ul style="list-style-type: none"> ii. of Management ii. Acquire skills on difference process of Human Resource management iii. Demonstrate the organizational behavior, management conflicts and organization of interventions iv. Concepts of Industrial relations and related legislations for industrial workers
28.	PS – 404 d	Health Economics	2020	<ul style="list-style-type: none"> i. Explore the concepts in economics in relation to health and population dynamics ii. Acquire skills in assessing costing and health economics iii. Critically analyze and evaluate general health status and quality of life and also measurement of health outcomes
29.	PS – 405 a	Rural, Urban, Tribal Development	2020	<ul style="list-style-type: none"> i. Explore the characteristics of rural, urban and tribal community ii. Discover community development and experiment projects in rural, urban and tribal areas iii. Critically examine and understand the issues related to rural, urban and tribal areas and approaches to community development
30.	PS – 405 b	Social policies and planning	2020	<ul style="list-style-type: none"> i. Discover social policies in relation to Indian constitution. ii. Examine the approaches to social policy iii. Demonstrate and analyze various social policies and their implementation

Masters in Social Work

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	MSW- 101	Sociology for Social Work	2020	<ul style="list-style-type: none"> i. Discover basic concepts in Sociology and examine the relation between individual and society. ii. Distinguish between Socialization, Social institutions and Social groups iii. Critically demonstrate , Social Stratification, Social Deviance, Social Change and Social Problems
2.	MSW - 102	Human Growth and Personality Development	2020	<ul style="list-style-type: none"> i. Memorize various stages of Human Growth and Development ii. Identify different concepts of Human Behavior like Motivation, Perception, Learning and Attitudes iii. Discover experience in assisting the person in Solving their Psycho social problems through personality development and adjustment
3.	MSW – 103	Social Work Profession & Field Work Orientation	2020	<ul style="list-style-type: none"> i. Recall various concepts like Social Service, Social Welfare, Social Development and Social Work ii. Experiment on Ethical Values of Professional Social Work and analyze current trends in Social Work iii. Design field work in Social Work and acquire

				skills to involve the client in problem solving process
4.	MSW 104	Social Work Practice with Individuals & Groups	2020	<ul style="list-style-type: none"> i. Recognize the basics Concepts , Techniques and Skills of case work ii. Apply different approaches of Case Work, Group Work iii. Evaluate the application of Social Case Work and Group Work at various settings like Schools, Hospitals, and Correctional Settings and in Communities.
5.	MSW – 105	Social Work Practicum - I	2020	<ul style="list-style-type: none"> i. Recognize the significance of Social Work in various settings ii. Illustrate the application of Social Work Methods in the agencies during their field practicum iii. Examine the applications of Social Work Principles and Skills in the functions of different organizational systems
6.	MSW - 106	Human Values and Professional Ethics-I	2020	<ul style="list-style-type: none"> i. Familiarize the concepts of ethics and its relation to Religion, Politics and Environment etc. ii. Able to gain knowledge on different aspect of Values and Interpret the best Skills in understanding the merits of value related aspects

				iii. Discover to interpret Crime and Theories of Punishment with special reference to Manu and Yajnavalkya
7.	MSW – 201	Social Work Profession & Field work Orientation	2020	<ul style="list-style-type: none"> i. Recognize the Scope, Importance and Significance of Social Work Practice in different fields ii. Acquire Knowledge and Skills Essentials for Working with Groups and Communities iii. Formulate Capacity Building by organizing training and awareness programmes in the Field Work Settings
8.	MSW – 202	Social Work Practice with Communities	2020	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Community organization and Social Work practice ii. Appraise various approaches in Community Organization and Current issues in Community Organisation iii. Organize community participation using PRA methods and techniques
9.	MSW - 203	Social Action and Social Legislation for Social Work Practice	2020	<ul style="list-style-type: none"> i. Distinguish the elements of Social action, Models and Process of Social Action ii. Connect the Social Legislations with Social Work Practice

				<ul style="list-style-type: none"> iii. Appraise Laws pertaining to Women, children and Aged in Social work practice
10.	MSW - 204	Social Policy and Planning	2020	<ul style="list-style-type: none"> i. Examine the nature and Approaches of Social Policy in the Socio-economic and political context ii. Assess the implementation of Social Welfare Policies in Education, Health, Women, Children and Environment iii. Examine the Role of Social Workers in Formulating , Planning and Implementation of Social Policies
11.	MSW - 205	Social Work Practicum-II	2020	<ul style="list-style-type: none"> i. Examine the Nature, Scope and Functions of the different Government and non-profit organizations agency at ground level ii. Trained to assist their supervisor with in the limitations of the agency iii. Equipped with Professional Skills and Techniques through practical exposure
12.	MSW – 206	Human Values and Professional Ethics - II	2020	<ul style="list-style-type: none"> i. Summarize different concepts of Human Values and Behavioural changes required for adjustment in Family and Society ii. Demonstrates Medical ethics and views of Charaka, Sushruta and Hippocrates on moral

				<p>ethics in Medical and Health care professionals.</p> <p>iii. Acquire Skills on Environmental ethics and the Environment and Health</p>
13.	MSW - 301	Social Work Intervention with Families	2020	<p>i. Discover the Family Centered Practice as a Model of Social Work practice and understand Family life management and Family Dynamics</p> <p>ii. Demonstrate Family Assessment and Application of Tools : Interviewing , Ecological assessment – Eco map , Generation assessment- Genogram, Triangle, Family Sculpture and Family Mapping</p> <p>iii. Integrate social work practice with Families and Social Work Therapeutic Interventions wherever appropriate</p>
14.	MSW - 302	Social Work in the Field of Health	2020	<p>i. Examine the concept of Health, factors affecting health and Indicators of Health.</p> <p>ii. Evaluate Primary and Community healthcare services with special references to communicable and Non-communicable diseases</p> <p>iii. Assess the relevance, domains and nature of Social Work Intervention in different Health settings.</p>

15.	MSW - 303	Counseling in Social Work Practice	2020	<ul style="list-style-type: none"> i. Understanding the basics of Counseling and Approaches of Counseling ii. Develop ability to apply appropriate Counseling Techniques with Special Group iii. Demonstrate to apply Counselling Skills while working with clients in various settings like Health ,Family and School Settings
16.	MSW – 304 a	Social work Research	2020	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Social Work Research process and Statistics ii. Illustrate single subject and evaluation Research Designs along with various Research designs iii. Facilitate methods of Sampling, Data Collection, Analysis, Statistical-Applications and Report Writing
17.	MSW – 304 b	Gerontological Social Work	2020	<ul style="list-style-type: none"> i. Identify theScope of Social Work in the field of Gerontology. ii. Illustrate Changes in the status of Elderly, Health problems and needs of Elderly. iii. Experiment the social work interventional strategies to Elderly ,Care givers and Counseling
18.	MSW – 304 c	Social Work Practicum-III	2020	<ul style="list-style-type: none"> i. Analysis the role of Community and dramatize the Community Organisation in field work practice

				<ul style="list-style-type: none"> ii. Develop skills and expertise their Field Work exposure to organize community programmes iii. Examine the new Intervention programs in the area of their specialization to bring a solutions to the problems in different community
19.	MSW – 304 d	Human Rights and Social Legislation	2020	<ul style="list-style-type: none"> i. Acquainted with advanced level of knowledge in Human rights ii. Distinguish various Social Legislations and Legislations related to Women and Children iii. Nurture the Social Work Professionals by creating awareness on various current issues and related Legislations
20.	MSW-305 a	Principles of Population Studies	2020	<ul style="list-style-type: none"> i. Demonstrate the concept of Population Studies, Components of Population Change Population Structure ii. Interpret basic concepts and measures of Fertility, Mortality ,Mobility and Migration iii. Critically evaluate the Concept of Multi Regional Demography, its uses and limitations
21.	MSW – 305 b	Fundamentals of Social Work	2020	<ul style="list-style-type: none"> i. Examine basic concepts, Principles and Methods of Social Work ii. Defend values and Principles of Professional

				<p>Social Work and Code of ethics for Social Workers</p> <p>iii. Evaluate Social Work Education in India, Professional Associations, Problems of Professionalization and Networks in Social Work</p>
22.	MSW - 401	Social Work Intervention with Children	2020	<p>i. Examine the Significance and Development of Child Welfare Services with special reference to Child Rights</p> <p>ii. Appraise various Institutional and Non-Institutional services for children in need</p> <p>iii. Create Professional Knowledge on Social Work Intervention with children in difficult situations</p>
23.	MSW – 402	Rural/Urban/Tribal Development & Empowerment –I	2020	<p>i. Acquainted with advanced level of knowledge in rural Urban and Tribal community and Community Development Projects across the country</p> <p>ii. Trained to meet the challenges specifically related to Rural, Urban and Tribal communities</p> <p>iii. Will nurture the Social Work Professionals to become effective Social Worker and contribute to community by conducting awareness camps, strengthening Self-Help Groups and Facilitating Empowerment in the communities.</p>

24.	MSW - 403	Social Work in the Field of Mental Health	2020	<ul style="list-style-type: none"> i. Understand the concept and importance of Mental Health and Psychiatric Social Work ii. Distinguish Psychiatric disorders and application of Therapeutic Interventions in Psychiatric Illness iii. Plan to provide Psychiatric Rehabilitation to assist Mentally Ill patients
25.	MSW – 404 a	Social Work in Industry & Human Resource Management	2020	<ul style="list-style-type: none"> i. Enrich knowledge on HRM, Personnel management, HR planning and ii. management systems iii. Appraise organizational behavior, conflict Resolution Strategies and Legislation related to industrial relations iv. Develop skills in Industrial Social Work Practice and the role and significance of Corporate Social Responsibility
26.	MSW – 404 b	Social Work Practicum-IV	2020	<ul style="list-style-type: none"> i. Acquires training in the organization as social worker and develop sound knowledge on social work which will motivate them to start an NGO ii. Evaluate projects and organize programmes for fund raising iii. Hypothesize research in their area of specialization through which they can suggest recommendations

				to agencies for improving quality
27.	MSW – 404 c	Social Work Practicum-V	2020	Learn Skills and able to apply Principles during the Internship in Block Placement Explore research studies at Micro levels and submit reports as Mini Project Work Demonstrate as effective Social Worker in the agency in which they are placed
28.	MSW – 404 d	Social Work and Disaster Management	2020	<ul style="list-style-type: none"> i. Summarize and understand the disasters and Disaster Management ii. Acquire a critical perspective of the policy framework, Institutional Structures and programmes for Disaster Management in India iii. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management
29.	MSW – 404 a	NGO Management	2020	<ul style="list-style-type: none"> i. Distinguish the Concept, Structure, Registration and By laws of NGOs ii. Demonstrate Organisational Management and source of funding of NGOs iii. Familiarize to organize Human Resource Management in NGOs
30.	MSW – 404 B	Health Education	2020	Discover the Roles, Responsibilities, Approaches and ethics in Health Education

				Describe the Behavioral, Environmental, and Genetic risk factors for Communicable and Non-communicable diseases. Evaluate channels of Health education and organizational health set up at Central, State and District levels
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23. Sanskrit

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	SNSKT 101	Elements of Darsanas-I	2020	An understanding of the evolution of Darsanas I.To create an awareness of the Darsanas ii.Acquire Knowledge of the Baudda and Jaina Darsanas iii.To get the Knowledge of Meemamsa Sastra
2	SNSKT-102	Vedic Texts-I	2020	I.Students able to get the Vedic knowledge II.Students know the importance of Vedic gods III.Students are understanding the Vedic chandas IV.To make understanding the spiritual knowledge through Kathopanishat
3	SNSKT-103	PROSE AND POETRY-1	2020	I.An understanding of evolution of Sanskrit poetry across the ages until the modern age II.Get the knowledge of gadya kavya III.Understand the poetical skills IV.Understand the importance of kiratarjuneeya in Sanskrit literature
4	SNSKT-104	DRAMA, ALANKARA AND PROSODY -1	2020	Student will be able to get I.Understanding the features of Sanskrit drama II.Knowledge of organ and development of Sanskrit dramas III.Understanding the efficiency of kalida's poetic skill.

				IV.Get the knowledge of chandas V.Get the knowledge of different types of chandas
5	SANSKT105 (A)	HISTORY OF SANSKRIT LITERATURE – 1	2020	After completed of course the students are able to I.Know the origin and development of Sanskrit literature II.Know the importance of Vedas and its date. III.Know the meaning and contest of Brahmanas, Aranyakas and Upanishads IV.Know the social conditions as reflected in the Brahmanas V.Know the importance of Ramayana and its date
6.	SANSKT :10 5(B)	DRAMA AND POETRY -1	2020	I.Students will be able to gain understanding the features of Drama, Sentiment Moralities II.Through understanding the importance and place of Rasa in the Drama III.The knowledge about the skillfulness of Bhavabhutis Dramatergy IV.Recognize the transpiration of human experiences into dramatic experiences V.The knowledge about importance of Sandesa Kavyas in Sanskrit Literature
7.	SANKT :105 (C)	ALANKARA AND PROSODY - 1	2020	I.Students will understand the different types of Alankara II.Know the importance of Alankara in the poetry III.Understand the development of on the basis of similar IV.Recognize the Guru and Laghu in prosody V.Know the importance of melody through prosody
8.	SANSKT:10 6(A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KOUMUDI- 1	2020	After complication of the course students are able to- I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing skills without grammatical mistakes..
9.	SANSKT:10 6 (B)	KAVYALANKARA SUTRA VRITTI -I	2020	I.Know the definition of poetry and prose II.Know the different types of Kavya III.Understand the different types of Riti

				IV.Understand the Pada and Padartha Doshas.
10.	SANSKT:10 7	HUMAN VALUES AND PROFESSIONAL ETHICS -I	2020	After completion of the course students are able to I.Understand Bhagavad Gita as a guide for modern life style II.Know the principles of Buddhism and Jainism III.Realize the necessary of practicing Human values and ethics in walks of life IV.Acquire the knowledge of Good and Bad V.Know the about crime and punishment according manu and Yajnavalkya
11	SANSKT – 201	ELEMENTS OF DARSANAS –II	2020	After completion of the course students are able to – I.Understand the knowledge of upamana and sabda pramanas II.Get the knowledge of Ayatharthanu Bhava III.Understand the Bahavana IV.Understand the Principals of Sankhya
12	SANSKT – 202	VEDIC TEXTS –II	2020	Students will know- I.The importance of Suktas II.The definition and purpose of Nirukta III.The meaning of Vedic words
13	SANSKT – 203	PROSE AND POETRY - II	2020	Students will able to get I.The beautification of prose literature. II.Enhancement of knowledge in appreciation of classical poetry III.Understanding about text that are selected. IV.Teaching skills in prose and poetry.
14	SANSKT – 204	DRAMA ALANKARA AND PROSODY – II	2020	Students will know I.The different characteristic features in Dramas II.The importance of nature and hermitages III.The features of Alankara and Classification of Alankaras IV.The knowledge of prosody
15	SANSKT –	HISTORY OF	2020	After the completion of the course students are able to

	205 (A)	SANSKRIT LITERATURE –II		I.Know the features of Mahakavyas II.Know the structure of Drama and social message III.Know the moral values through the tales IV.Get the glance of classical Sanskrit literature
16	SANSKT – 205 (B)	DRAMA AND POETRY - II	2020	I.Get knowledge of good II.Know the character of Hero and Hero in etc., in the Drama III.Know the changes stories between original and creativeness IV.Know the importance skill fullness in poetry of Kalaidasa
17	SANSKT – 205 (C)	ALANKARA AND PROSODY - II	2020	I.Know the features and Examples II.Understand the different types of Uktis in Alankaras III.Know the difference between stuti and Ninda Alankaras IV.Get knowledge of sikharini and Mandakranta vrittas V.Know the definition and importance of Gayatri Matras
18	SANSKT - 206 (A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KAUMUDI – II	2020	After complication of the course students are able to – I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing Skills without grammatical mistakes
SANSKID-206	206 (B)	KAVYALANKARA SUTRA VRITTI - II	2020	I.Know the difference between Guna and Alankara II.Ability to understand the theory of Riti III.To enable to understand the usage of Sabdalankaras IV.Know the contribution of Vamana to alankara sastra
20	SANSKT - 207	HUMAN VALUES AND PROFESSIONAL ETHICS - II	2020	I.Understand the relevance of value based education in modern society II.Understand the old traditions of medical ethics III.Understand the solutions of illegal and unethical practice IV.Understand the man and nature, Natural calamities and get the solution regarding those situations.
21	SANSKT :30 1	(Sahitya) RASAGANGADHARA,	2020	After the completion of the course students are able to I. Understand the Rasaswarupa

		(ANANA.I) – I (IE)		II.Understand the purpose of Kavya and different types of Kavya III.Know the interpretations of Rasa sutras and ten types of Gunas IV.Know the Abhasas
22	SANSKT :30 2	DHVANYALOKA - 1	2020	on completion of the course students are able to I.Understand the Dhvani swarupam II.Understand the opinion of Dhvanyabhavavadins III.Know the Dhavanikavya Lakshana IV.Know the Vyangya as Kavyatma V.Get the knowledge of splendid sastra Dhvanyaloka
23	SANSKT :30 3-A	KAVYAPRAKASA AND DASARUPAKA- 1(IE)	2020	Students will get - I.The knowledge of definition of kavya, types of kavyas II.The Knowledge about verities of vyangya III.The Knowledge of vyanjanaswarupa IV.An idea of ten types of Rupakas
24	SANSKT:30 3-B	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-I	2020	On completion of the course students are able to I. Get the knowledge of sentence formation to write the essays on different issues II. Acquire the knowledge of Alankarikas III.Understand the different theories in Alankara sastra. IV.Understand the theory of Alankara and Rithi.
25	SANSKT:30 3-C	Natyastraam Chapter I & VI only	2020	
26	SANSKT:30 3-D	Bhojaraja's Champu Ramayana (Balakanda only)	2020	
27	SANSKT:30 4	Personality Development in Pancatantra (Mitraheda and Mitrapraptikam only)	2020	.I.Know the losses arriving out of Non friend ship II.Know the world knowledge III.Achieving personality development through Panchatantra

28	SANSKT:30 5-A	Introduction of Sanskrit languag Infant Reader complete	2020	
29	SANSKT:30 5-B	Raghuvamsam (Ist canto only)	2020	on completion of the course students are able to I.Understand the greatness of Sanskrit Language II.Know the greatness of poetry III.Get knowledge on panchamahakavya's after the epic literature IV.Get the knowledge about the kalidasas Natural and beautiful creations V.Understand the uses of upamalankara by kalidasa
30	SANSKT:40 1	(SAHITYA) RASAGANGADHARA (ANANA-I)	2020	After completion of the course students are able to I.Know the number of Rasas in kavyas II.Know the uses of Rasa to elevate the situations in kavya III.Acquire the knowledge of Gunas and their role in Kavyas IV.Understand the differentiation of Bhava in Alankara sastra.
31	SANSKT :40 2	DHVANYALOKA –II	2020	Students will be able to get- I.The knowledge about different forms of schools II.Knowledge about the classification of Dhvani Siddhanta III.Knowledge regarding different alankara dhvanis IV.Know the difference between Rasadhvani and Rasavadalankara V.Know the main Rasa in Ramayana and Mahabharatha
32	SANSKT:40 3(A)	KAVYAPRAKASA AND DASARUPAKA– II	2020	After the completion of the course students are able to – I.Understand the structure of the Kavya II.Get the knowledge of Rasa and it's Bhedas III.Find out the classification of Dhvani IV.Understand the Lakshana of Nataka V.Get the knowledge about 10 types of Nataka Bhedas
33	SANSKT:40	HISTORY OF	2020	After the completion of the course students are able to –

	3(B)	SANSKRIT POETICS AND SANSKRIT ESSAY-II		I.Get the knowledge of writing skills II.Acquire the knowledge of several Aesthetic poets like Mammata, Ruyyaka III.Understand the main theories on kavya of different poets IV.Get the knowledge of presentation skills on social related issues
34	SANSKT :40 3(C)	Kavyadarsa Chapter – I	2020	
35.	SANSKT :40 3(D)	KavyaMeemamsa first to Eight Adhyayas	2020	
36.	SANSKT :40 4	Introduction to Epigraphy and Manuscriptology	2020	After the completion of the course students are able to I.Get the knowledge of inscriptions II.Acquire the knowledge of Brahmi and kharoshthi scripts III.Get the knowledge of writing materials in Ancient India IV.Get the knowledge of edition and critical edition of Manuscripts
37.	SANSKT :40 5 (A)	Hithopadesa of Narayanapandita Mitrabha and Mitrabheda	2020	Students will be able to I.Get the moral values II.Understand the mentality of different kinds of people in the society III.Acquire the knowledge to behave a good citizen and a well human being IV.Understand the message through neetikavya
38.	SANSKT :40 5(B)	Kautilya'sArthasastra Chapter – I (Vinayadhikarikam)	2020	

24. Sociology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MASO-101	Classical Sociological Theories	2020	<ol style="list-style-type: none"> 1. This paper seeks to expose the students to the classical thinkers and their contribution in building theoretical sociology. 2. To Compare and contrast the basic theoretical perspectives of sociology 3. To acquaint students with recent trends in Sociological thought.
2	MASO -102	Sociological Research Methods and Statistics	2020	<ol style="list-style-type: none"> 1. This course aims to enable the students to understand the fundamental nature of the scientific approach towards social research and apply the skills in undertaking social research. 2. To equip the students with strategies of development for different segments of society. 3. To provide ways and means of understanding and studying social reality
3	MASO -103	Indian Society and Inclusive Growth	2020	<ol style="list-style-type: none"> 1. This paper presents a comprehensive and integrated profile 2. To gain a better understanding of past and present structure and continuity of society 3. Identify and analyze the problems in Indian society and suggest solutions from sociological perspective
4	MASO -104	Participatory Research	2020	<ol style="list-style-type: none"> 1. This paper is to inspire students to undertake research in partnership with stakeholders 2. To explain the emancipatory and empowering,

				<p>collaborative and reflective approaches</p> <p>3. To discuss the relationship between PRA and scientific method to incorporate the results to change the practice and policy.</p>
5	MASO -105	Principles of Sociology	2020	<p>1. This paper gives the students an understanding of the basic principles of Sociology as an academic discipline</p> <p>2. To analyze the ways in which people interact and function in groups</p> <p>3. It provides a basic knowledge on the fundamental aspects of the important social institutions</p>
6.	MASO -106	Human values and Professional Ethics - 1	2020	<p>1. To help students distinguish between values, skills, and understand the need, basic guidelines, content and process of value education</p> <p>2. To provide Human Values and Ethics relating to Religion, Business, Law, Media and Environment</p> <p>3. To provide an in depth knowledge about the Moral and ethical values for interpretation in their day to day life</p>
7.	MASO -201	Applied Sociology	2020	<p>1. To help students develop clear understanding of key concepts in classical and contemporary sociology and how these concepts relate to some of the perennial themes in the discipline</p> <p>2. To develop an appreciation of the link</p>

				<p>between sociological theory and practice</p> <p>3. To help students master the art of explaining abstract material in clear, precise ways that can be easily understood even by a lay man</p>
8.	MASO -202	Social Demography	2020	<p>1. To introduce the significance of population and its relation to society</p> <p>2. To provide a theoretical knowledge of the basic concepts of population and changes</p> <p>3. To enable the students to realize impact of population , changing global scenario, awareness on population control devices and analyse prospects</p>
9.	MASO -203	Rural Sociology and Development	2020	<p>1. This course is to help the students to understand the difference between urban and rural development</p> <p>2. To analyse the dynamics of rural Indian society in the context of its socio, political and economic contradictions</p> <p>3. To evaluate the problems related to development in relation to the needs and aspirations of the marginalized sections</p>
10.	MASO -204	Extension Work	2020	<p>1. This paper expose the students to apply sociological theories and principles in field areas</p> <p>2. To give direct experience of social institutions and social problems through field work</p> <p>3. To train for creative and innovative experiences in social field using research techniques</p>
11	MASO -205	Environmental Sociology	2020	<p>1. This paper aims to provide the students with a comprehensive conceptual, theoretical and</p>

				<p>empirical backgrounds of interaction between Social world and Nature</p> <ol style="list-style-type: none"> 2. To explore the relationship between human society and the larger natural environment 3. To prepare the students for further research in broad areas of environment and natural resource governance from sociological perspective
12	MASO -206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 1. To provide knowledge about Value oriented education, Medical ethics, Family values , Ethics and Moral code 2. To provide the Business, Environmental and social ethics followed and practiced 3. To enhance values of self-esteem and self-respect among students
13	MASO -301	Medical Sociology	2020	<ol style="list-style-type: none"> 1. This course will help the students to understand the concepts of health and illness 2. To understand the social facts of health and the root causes of illness 3. To apply sociological theories, concepts, and research to experiences of health, illness, health education, public health and the intense public issues related to health
14	MASO -302	Urban Sociology and Development	2020	<ol style="list-style-type: none"> 1. This paper attempts to analyse the urban social world and its dynamics, various theoretical constructs concerning the patterning and growth of towns and cities 2. To understand the various theoretical approaches to urban development and apply them to different aspects of cities 3. To study historical, economic, and political

				trends that have affected the growth and development of cities
15	MASO -303	Field Work and Extension (Village placement)	2020	<ol style="list-style-type: none"> 1. This paper aims at direct exposure of students to the real world and problems confronting society 2. Students will carry out field work in village for 10 days for practical experience 3. To learn about sociological study techniques like Participatory Rural Appraisal, Sampling, Interview and Extension
16	MASO 304	Generic electives (a) Human Rights	2020	<ol style="list-style-type: none"> 1. To study Human rights and Constitutional framework 2. To recognize the role of human rights in development, theories of development, development and tradeoff on human rights 3. To Understand the social, political, cultural, and comparative construction of human rights history , institutions, discourses, and futures
		(b) Sociology of Gender	2020	<ol style="list-style-type: none"> 1. To examine how society influences understandings and perception of differences between masculinity (what society deems appropriate behaviour for a “man”) and femininity (what society deems appropriate behaviour for a “woman”). 2. To understand influences of gender on identity and social practices. 3. To pay special focus on the power relationships that follow from the established genderorder in a given society and changes over time.
		c) Gerontology	2020	<ol style="list-style-type: none"> 1. This paper aims at understanding physical, psychosocial, and cultural aspects of the aged

				<ol style="list-style-type: none"> 2. To understand aging transitions and intergenerational issues at various contexts and its nexus 3. To examine health and illness adjusting to loss and care of persons with chronic illnesses and rehabilitative needs
		(d) Sociology of Andhra Pradesh	2020	<ol style="list-style-type: none"> 1. This paper aims to study the historical outline and emergence of Andhra society 2. To understand the culture and various social movements in Andhra Pradesh 3. To analyze the welfare and developmental programmes of the rural and urban Andhra Pradesh
17	MASO -305	Open elective (a) Social Psychology and Personality Development	2020	<ol style="list-style-type: none"> 1. This paper aims at the understanding the relationship of cognition and attitudes of individual and society 2. To focus on psychological aspects of the individual in the context of social behaviour 3. To examine group dynamics such as group thinking and decision making, leadership, persuasion, conflict and cooperation)
		(b) Business And Society	2020	<ol style="list-style-type: none"> 1. This paper aims at understanding the concepts of Social economy and knowledge management 2. To examine the business community and social responsibility 3. To understand the inter-relation among business firms, organizations , public policy, business law and governance
23	MASO -401	Criminology	2020	<ol style="list-style-type: none"> 1. This paper seeks to describe the students about the different types of crime and scope of

				<p>criminology</p> <ol style="list-style-type: none"> To illustrate the causes of crime and crime rates To study the crime scientifically through data on crime, trends and various theoretical approaches
24	MASO-402	Industrial Dynamics	2020	<ol style="list-style-type: none"> This paper aims to provide the students about the structure and process of industrial organizations from sociological perspective To deal with the effects of industrialization on Indian social systems and institutions To study the internal relations which are connected directly or indirectly with industry
25	MASO-403	Field Work	2020	<ol style="list-style-type: none"> This paper aims at exposing students in analysing the data To understand the different variations in viva-voce To understand the recent patterns in Practice
26	MASO-404	Generic electives (a) Social Welfare and Welfare Administration	2020	<ol style="list-style-type: none"> This paper aims at understanding the efficiency of resources and services to meet the needs of the individuals, families, groups and communities To understand the problems of Schedule castes, Schedule tribes, Backward classes and Minorities To facilitate social relationship and adjustments necessary for the disadvantaged sections, children, women, youth and elderly
		(b) Social Entrepreneurship Development	2020	<ol style="list-style-type: none"> The aim of this paper is to understand the theoretical positions of the Social

				<p>entrepreneurship development</p> <ol style="list-style-type: none"> 2. To be aware of the contemporary approaches to social entrepreneurship 3. To have comprehensive understanding of the context, process and effects of entrepreneurial activities
		(c) Sociological Perspectives	2020	<ol style="list-style-type: none"> 1. This paper aims at the students to compare and contrast basic theoretical perspectives of sociology through rigorous scientific enterprise 2. To sensitize the need for empirically grounded theories 3. To acquaint students with the recent trends in Sociological thought
		(d) Globalization and society	2020	<ol style="list-style-type: none"> 1. This paper aims at the students to understand the nature and dynamics of globalization and social context through various agencies 2. To analyze the interconnected changes in the economic, cultural, social, and political spheres of society 3. To understand ever-increasing integration of nations, regions, communities
27	MASO-405	Open elective (a) Globalization and Educational Pursuits	2020	<ol style="list-style-type: none"> 1. This paper aims to understand multifaceted nature of globalization and internationalization in the context of higher education 2. To examine key concepts and theories of globalization, international and comparative education 3. To make the students understand the Global

				citizenship from professional and academic perspective
		(b) Visual Sociology	2020	<ol style="list-style-type: none"> 1. This paper aims at providing the students a new perspective in study of deliberate versus spontaneous behavior 2. To be aware of recording social signals, expressions as spontaneous as possible 3. To organize the recording of reactions and variations that occur as a response to the context

25. Tamil

26. Telugu Studies

27. Urdu

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	URD 101	Mubadiyat-e- Lisaniyat aur Tareeq-e –Zaban-e-Urdu	2020	Course Outcomes: (1) Knowledge of history of basic Urdu Language. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.	
2.	URD 102	Dakniyat	2020	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyses the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani	

3.	URD 103	Classiki Nasr	2020	<p>Course Outcomes:</p> <p>(1) Student will be able to understand the early Urdu poetry of Northern India.</p> <p>(2) Understanding the different forms of Urdu Poetry and poets.</p>	
4.	URD 104	Arabi Zaban-o-Adab	2020	<p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of humor and satire in Urdu literature.</p> <p>(2) Differentiate between satire and humor in text.</p> <p>(3) Analyze the text and identify the elements of satire</p>	
5.	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2020	<p>Course Outcomes:</p> <p>(1) Able to read, write and understand simple Arabic sentences.</p> <p>(2) Translate simple Arabic sentences.</p> <p>(3) Student will gain brief awareness of Arabic literature</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Qaseeda from Dakani period.</p> <p>(2) Differentiate between the Dakani and Urdu Qaseeda with respect of language, diction and style</p> <p>(3) Understand the salient features of Urdu Qaseeda with special reference to Nusrati, Sauda and Zauq.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Marsiya.</p> <p>(2) Compare and analyse the Marsiya of Anees and Dabeer.</p>	
6.	URD 106	Human Values and Professional Ethics – I	2020	<p>Course Outcomes:</p> <p>(1) Knowledge about tradition of Urdu Drama.</p> <p>(2) Distinguish various forms and techniques of Urdu Drama.</p> <p>(3) Analyses critically the text of Anar kali and Inder Sabha.</p> <p>Course Outcomes:</p> <p>(1) The student would enrich the knowledge about the Urdu poets and writers of Andhra Pradesh and Tamil Nadu.</p> <p>(2) Would understand the features of regional Urdu poets</p>	

7.	URD 107		2020	Course Outcomes: (1) Understand, What are the Human Values accepted globally. (2) Knowing the importance of Human Values in religious	
8.	URD 201	Rayalaseema ka Sher-o-Adab	2020	Course Outcomes: (1) Have learn about the important historical events of Urdu Poetry. (2) Have knowledge about the most important schools of	
9.	URD 202	Classiki Shairi	2020	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyze the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani	
10.	URD 203	Hali : Hayat aur Adabi Khidmat	2020	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	
11.	URD 204	Farsi Zaban-o-Adab	2020	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	

12.	URD 205	Ghair Afsanavi Adab	2020	<p>Course Outcomes:</p> <p>(1) Student will be able to read, write and understand simple persian sentences.</p> <p>(2) Acquire Knowledge about the Persian poetic writings of Sa'di, Hafiz and Iqbal.</p> <p>(3) Student will gain brief awareness of Persian literature.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of Faiz Ahmed Faiz.</p> <p>(2) Identify the uniqueness of the poetry of Faiz Ahmed Faiz.</p> <p>(3) Understanding the salient features of the poetry of Faiz Ahmed Faiz.</p> <p>Course Outcomes:</p> <p>(1) Specialized in the life and contributions of SulaimanAtherlaweed</p>	
13.	URD 206 206	Human Values and Professional Ethics –II	2020	<p>Course Outcomes:</p> <p>(1) Awareness of literature written in Rayalaseema.</p> <p>(2) Understand the style of new poets of thisregion.</p> <p>(3) Gain knowledge about two of the pominent prose writers of this area</p> <p>Course Outcomes:</p> <p>(1) Apply the skills of Ilm e bayan and identifying the phrases in poetry.</p> <p>(2) Applying Ilm e Areez skill in poetry.</p>	
14.	URD 207		2020	<p>Course Outcomes:</p> <p>(1) Awareness about Professional Ehics and its categorization.</p> <p>(2) Understand the importance of Professional Ethics in society.</p>	
15.	URD 301	Jadeed Nasr	2020	<p>Course Outcomes:</p> <p>(1) Knowledge about the forms and tradition of Urdu Ghazal.</p> <p>(2) Understanding Dakani Ghazal with reference to eminent Dakani poets.</p> <p>(2) Understanding Classiki Ghazal and Jadeed Ghazal with</p>	

16.	URD 302	Jadeed Nazm	2020	<p>Out comes</p> <p>(1) Understanding the forms of Urdu Nazm. (2) Critically estimate and explain the art and technique of famous Urdu poets. (3) Knowledge about the distinctive features Urdu Nazm</p>	
17.	URD 303	Urdu Tanqeed	2020	<p>Out come</p> <p>(1) The learner would understand about the mile stones of Urdu Novel. (2) The learner would understand the technical features of Urdu Novel. (3) The learner would understand about the Urdu Novel writers.</p> <p>Out come</p> <p>(1) Knowledge about tradition of Urdu Afsana. (2) Awareness of literary trends and its impact on Urdu Afsana. (3) Identifying and distinguishing the elements in Urdu Afsana</p> <p>Course Outcomes:</p> <p>(1) The learner would understand about the history of computer. (2) The learner would understand the technical features of Urdu computer.</p>	
18.	URD 304 A URD 304 B URD 304 C URD 304 D	(a) Sir Syed ka Khusoosi Mutalea (b) Iqbal ka Khusoosi Mutalea (c) Faiz ka Khusoosi	2020	<p>Course Outcomes:</p> <p>(1) The learner will know about the aims and objectives of the Journalism. (2) Distinguish between writings of news paper, radio and television. (3) The learner will know about the different fields of Urdu journalism.</p>	

19.	URD 305 A URD 305 B URD 305 C	(a) Urdu Ghazal (b) Jadeed Dakani Shairi (c) Urdu Afsana	2020	<p>Course Outcomes:</p> <p>(1) Knowledge about Jadeed Dakani Shairi. (2) Understand Jadeed Dakani Shairi and its vocabulary and diction. (3) Critical awareness about 5 eminent poets of Jadeed Dakani.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about types, techniques and issues of translation. (2) Distinguish between various types of translations. (3) Understand the tradition of Urdu translation and literary</p>	
20.	URD 401	Urdu Drama	2020	<p>Course Outcomes:</p> <p>(1) Knowledge of Basic Linguistics. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.</p>	
21.	URD 402	Adabi Tehreekat aur Rujhanat	2020	<p>Out comes</p> <p>(1) Knowledge about research, types of research and method of research. (2) Distinguish between various types of research writings. (3) Capable for selection of topic, material collection, designing the research work and writing research paper.</p>	

22.	URD 403	Tanz –o- Mizah	2020	<p>Out come (1) Knowledge about Literary criticism. (2) Vies and contributions of Hali and Shibli on literary criticism. (3) Understanding 6 schools of literary criticism.</p> <p>Out come (1) Understand the tradition of Ghari Afsanavi Adab and its salient features. (2) Literary importance of Maktoob Nigare and Inshaiya. (3) Literary importance of Khaka and Safarnama.</p> <p>Course Outcomes: (1) Understand the literary contributions of Altaf Husain Hali. (2) Importance and salient features of Mussadas, Muqaddama & Maqalat. (3) Understand the writing style of Hali as a biographer</p> <p>Course Outcomes: (1) Knowledge about form and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to 2</p>	
23.	URD 404 A URD 404 B URD 404 C URD 404 D	(a) Urdu Tarjuma Nigari (b) Urdu Marsiya (c) Urdu Khudnavisht	2020	<p>Outcomes: (1) Able to know the history and trends of Telugu, Hindi and English languages. (2) Gain the comparative knowledge of various languages and their literature</p>	
24.	URD 405 A URD 405 B URD 405 C	(a) Ibtdayi Urdu (b) Tehqeeq - Tariqekar (c) Urdu Qaseeda	2020	<p>Course Outcomes: (1) Specialized in the contributions of Sir Syed Ahmed Khan. (2) Contributions of Sir Syed Ahmed Khan, as literary person and as a educationist. (3) Understanding the contributions of his literary friends</p> <p>Course Outcomes: (1) Specialized in the contributions of Sir Mohammed Iqbal. (2) Contributions of Allama Iqbal with reference to Bal e</p>	

S.V.U. College of Sciences

28. Anthropology

S. No.	Name of the Programme	Course Code	Title of the Course	Years	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	M.Sc. Anthropology	ANO : 101	Introduction to Social Cultural Anthropology	2020	<ul style="list-style-type: none"> a. Exposed to the basic introductory background about Socio-cultural Anthropology, its historical background and relation to other branches b. Provides knowledge about the entire subject matter of the socio-cultural anthropology as well as its different sub-branches. c. Exposed to social institutions d. Know the religion beliefs, rituals and myth
2	M.Sc. Anthropology	ANO : 102	Introduction to Biological Anthropology	2020	<ul style="list-style-type: none"> a. Exposed to the basic concept, meaning and scope of Biological Anthropology b. Explain how human being acts as the central figure of Anthropology c. Elucidate the major divisions of Biological/ physical Anthropology d. Know the inter-relationship between Biological Anthropology and other sciences e. To know how Man evolved in animal kingdom f. To understand how evolution has

					occurred and what are the evidences of evolution and addresses human variation and the causes of variations
3	M.Sc. Anthropology	ANO-103	Introduction to Archaeological Anthropology	2020	<ul style="list-style-type: none"> a. Able to define archaeological anthropology and its branches b. Understand the geological timescale, tool typology and technology c. The Course will explain the basic concepts and terminology used in prehistoric archaeology d. Understand chronological and cultural determinants of Indian and European prehistory
4	M.Sc. Anthropology	ANO-104P	Somatometry & Somatoscopy	2020	
5	M.Sc. Anthropology	ANO 105p	Archaeological Anthropology	2020	
6.	M.Sc. Anthropology	ANO 106	Economic and Political Anthropology	2020	<ul style="list-style-type: none"> a. Able to learn meaning and scope of economic anthropology b. To understand the division of labor by gender and age, exchange of goods and gifts, and to understand the market economy. c. Able to know the historical background of Political Organization besides types and trends of Political Organization including types like i.e. Band, Tribe, Chiefdoms and State d. To know the local institutions: panchayats (traditional and statutory)

7.	M.Sc. Anthropology	ANO 107	Human Values and Professional Ethics -1	2020	
8.	M.Sc. Anthropology	ANO 201	Comparative Ethnography and Indian Anthropology	2020	<ul style="list-style-type: none"> a. To understand the major ethnological regions of the world b. To know the ethnic and linguistic classifications c. Able to understand the traditional Indian culture d. To know the contributions of Indian anthropologists
9.	M.Sc. Anthropology	ANO 202	Principals of Genetics	2020	<ul style="list-style-type: none"> a. understand about the scope of genetics and its historical development b. to learn the biology of cell and cell division c. Exposed to the patterns of the inheritance d. Know about blood groups and their anthropological perspective
10	M.Sc. Anthropology	ANO 203	Research Methods in Anthropology	2020	<ul style="list-style-type: none"> a. To understand the fieldwork traditions in Anthropology b. To understand the concept of research and its purpose c. highlight the conceptual structure of a research design d. understand the various statistical tools in the analysis and interpretation of the data
11	M.Sc. Anthropology	ANO 204P	Craniology and Craniometry	2020	
12	M.Sc. Anthropology	ANO205P	Doing Ethnography	2020	

13	M.Sc. Anthropology	ANO206	Prehistoric India	2020	<ul style="list-style-type: none"> a. learn the regional distribution of lower, middle, and upper Paleolithic cultures b. To learn the Mesolithic culture and typo- technology c. Learn the regional distributions of Neolithic cultures d. understand the copper and iron age e. exposed to the distribution of megaliths
14	M.Sc. Anthropology	ANO 207	Human Values and Professional Ethics -II	2020	
15	M.Sc. Anthropology	ANB 301	Human Evolution and Fossil Evidence	2020	<ul style="list-style-type: none"> a. Understand the evolutionary trends of primates, prosimians to homosapiens b. To know the hominid evolution c. To know the Neanderthals distributions and extension d. Exposed to the homo sapiens distribution and feature of human species
16	M.Sc. Anthropology	ANB 302	Human Genetics	2020	<ul style="list-style-type: none"> a. understand the meaning and scope of human genetics b. know methods of studying human chromosomes and chromosomal abnormalities c. depict Inborn errors of metabolism with typical examples and human human ABO blood group system and its fundamentals d. know the concept of “one-gene-one-

					enzyme hypothesis” which explains development of genetic diseases/disorders caused by defective genes controlling the functions of enzymes in metabolic pathways
17	M.Sc. Anthropology	ANB 303P	Human Osteology and Osteometry	2020	
18	M.Sc. Anthropology	ANB 304P	Dermatoglyphics	2020	
19	M.Sc. Anthropology	ANB 305	Anthropological Demography	2020	<ul style="list-style-type: none"> a. Know about the different population growth theories b. Learn the basic demographic variables c. Understand how the different factors regulates the population growth d. Understand the different demographic models e. Learn the genetic consequences of family planning
20	M.Sc. Anthropology	ANB 306	Biostatistics and Computer Applications	2020	<ul style="list-style-type: none"> a. To understand the concept of research and its purpose b. To enlighten the process of research and conceptual structure of a research design c. Understand the disease outcomes through measurement of descriptive, analysis of variance and regression models through computer applications d. Know the use of computers in the analysis data and power point presentation
21	M.Sc. Anthropology	ANB 307	Forensic Anthropology	2020	a. able to know about forensic

					<p>anthropology, a specialized, applied branch of physical/biological anthropology which deals with the crime investigation</p> <ul style="list-style-type: none"> b. understand how dermatoglyphic, somatoscopic characteristics and body fluids helpful in crime investigation c. know the use of skeletal remains in forensic investigations d. know the importance of modern methods in crime investigation
22	M.Sc. Anthropology	ANB 308	Palaeoanthropology	2020	<ul style="list-style-type: none"> a. understand the geological time scale and Pleistocene epoch b. know about tool making techniques and tool types c. gain knowledge about dating methods d. learn about Paleolithic, Mesolithic and Neolithic cultures in India
23	M.Sc. Anthropology	ANB 401	Biological Anthropology	2020	<ul style="list-style-type: none"> a. Understand the basic concept, meaning and scope of Biological Anthropology b. Know the biological variation in modern human populations c. Understand the human adaptability and impact of urbanization on humans d. Bio-cultural aspects of health and disease
24	M.Sc. Anthropology	ANB-402	Human Population Genetics	2020	Students will

					<ul style="list-style-type: none"> a. Explain the basic terms/concepts of human population genetics b. Appreciate the mechanisms of evolutionary forces in shaping biological diversity c. Understand the importance of Hardy – Weinberg Equilibrium especially the gene frequency changes with respect to Mutation, Genetic drift, Selection, Gene flow and to investigate them in empirical situations in human populations d. Know about breeding isolation and its implications in human population genetics. e. Understand various mating patterns (inbreeding and types of consanguineous marriages) and measure the inbreeding in families
25	M.Sc. Anthropology	ANB-403P	Advanced Biological Anthropology	2020	
26	M.Sc. Anthropology	ANB 404 P	Fieldwork, Dissertation & Viva-Voce	2020	
27	M.Sc. Anthropology	ANB -405	Human Growth, Physique and Nutrition	2020	<ul style="list-style-type: none"> a. Know about the Differentiate the term growth, maturation and development b. To learn the methods of studying growth and the factors affecting the growth c. To understand the Human Physique and its Relation of Function, Disease

					and Behavior. d. Know the socio-cultural aspects of nutrition and nutrients in health and diseases
28	M.Sc. Anthropology	ANB 406	Applied Biological Anthropology	2020	<ul style="list-style-type: none"> a. Know about various applications of anthropometry and kinanthropometry in various fields b. Understand about the importance of forensic anthropology in crime investigations c. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy d. Learn about the human geno project
29	M.Sc. Anthropology	ANB 407	Medical Genetics	2020	<ul style="list-style-type: none"> a. Understand the overplanting areas of anthropology and genetics, anthropology and medicine (Disease) b. Understand the different methods of identification genetic diseases c. Know about epidemiology, socio cultural and ecological dimensions of genetic diseases control and treatment d. Learn the knowledge, attitude and currying practices of genetic diseases
30	M.Sc. Anthropology	ANB-408	Epidemiology	2020	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of

					<p>public health.</p> <ul style="list-style-type: none"> b. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology c. Know about Complications of obesity on health its prevention and control d. Understand the complex web of biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
31	M.Sc. Anthropology	ANB -409	Human Ecology	2020	<ul style="list-style-type: none"> a. Exposed to the various ecological settings of human habitat . b. Know the ecological evaluation and adaptation. c. To understand the growth and development in various eco-systems d. Understand the Differential Fertility and Mortality, Survival Indices, quality of Life and Fitness
32	M.Sc. Anthropology	ANS 301	Theories of Culture	2020	<ul style="list-style-type: none"> a. Understand the Conceptual Contributions of E. B. Tylor, B. Malinowski, A. L. Kroeber, L. White, Unilineal Evolution (L. H. Morgan and E. B. Tylor); Multilineal Evolution (J. Steward); Universal Evolution (L. White) b. To know the British School; German-Austrian School; American – Distribution School of culture

					<ul style="list-style-type: none"> c. Know the Patterns of Culture (R. Bendict); Basic Personality, Model Personality (Kardiner, Linton, Cora Dubois); Selfhood (Murphy); Symbolic (G. Obeysekere) d. understand the historical approaches of culture
33	M.Sc. Anthropology	ANS 302	Social Anthropology of Complex Societies	2020	<ul style="list-style-type: none"> a. Learn the meaning and approach of great and little traditions b. learn about the peasant societies and contemporary peasant societies c. know the culture of poverty, institution and complex societies d. understand problems of urbanization and social changes
34	M.Sc. Anthropology	ANS 303P	Participatory of Research methods in Development Process	2020	
35	M.Sc. Anthropology	ANS 304P	Non-Governmental Organizations and Extension studies	2020	
36	M.Sc. Anthropology	ANS 305	Ecological Anthropology	2020	<ul style="list-style-type: none"> a. Understand the environment and ecosystem in understanding the cultural modifications b. Know about the cultural ecology, cognitive ecology, single unified ecology, and ethno ecology. c. Learn issues and prospects on development projects and displacement d. Understand Biodiversity for sustainable development Knowabout Ecological protest movements (Chipko and Narmada

					Bachao Andolan (NBA));
37	M.Sc. Anthropology	ANS 306	Applied Anthropology- Indigenous Communities	2020	<ul style="list-style-type: none"> a. Know the Similarities and Differences between Applied and Action Anthropology, Indigenous communities and applied anthropology. Indigenous rights. b. Know the process of acculturation and assimilation, socialization c. Know about applications of Anthropology in the management of health, agriculture, education and biodiversity and poverty eradication d. Gain the knowledge on tribal welfare, tribal problems, forest and property rights, shifting cultivation and tribal movements
38	M.Sc. Anthropology	ANS 307	Anthropology of Religion Sacred complexes in India	2020	<ul style="list-style-type: none"> a. Know about meaning and relation with power and political leverages, ethnic identity and other aspects of culture in tradition and modern societies b. Know the different anthropological theories of religion c. Know the issues of right of food among by Hindus, five symbols of sikh identity, Aspects of sarora ritual and Shamansism, and Christianity in India d. To understand Contemporary issues of religious violence, secularism and fundamentalism

39	M.Sc. Anthropology	ANS 308	Anthropology and Career Promotion	2020	<ul style="list-style-type: none"> a. Understand the anthropology in competitive examinations b. Know about participatory research appraisal c. Exposed to the issues in tribes, tribal problems and cast populations d. Learn the books to be consulted, review of questions and scheme of valuation
40	M.Sc. Anthropology	ANS 401	Structural Anthropology	2020	<ul style="list-style-type: none"> a. Know the social structure and function of culture b. Understand about the ideal and real social structure and social organization c. Know the general notion of structuralism d. Learn the symbols and structure
41	M.Sc. Anthropology	ANS-402	Medical Anthropology	2020	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the etiology, control of infections and non-infections diseases c. Understand the ethno-medicine in the management of health and illness behavior d. Understand the modern medical systems and health care delivery services

42	M.Sc. Anthropology	ANS-403P	Computer Applications	2020	
43	M.Sc. Anthropology	ANS 404 P	Fieldwork, Dissertation & Viva-Voce	2020	
44	M.Sc. Anthropology	ANS -405	Developmental Anthropology	2020	<ul style="list-style-type: none"> a. Know about the Concept of Development and Sustainable Development b. Understand the steps in project preparation, goals, process of implementation and monitoring. c. Role of government, NGOs and peoples participation in development d. Know the watershed management and irrigation, resettlement, (Narmada) poverty Alleviation (Velugu); Primary Education (VECs
45	M.Sc. Anthropology	ANS 406	Culture and Management	2020	<ul style="list-style-type: none"> a. Know the concept of organizational culture. Its links with cultural anthropology Organizational ethnography. Anthropology of work b. Understand the Theories of organizational culture. Different anthropological traditions c. Know the How culture affect management Changes in management styles Future outlook. d. To understand the Ethno methodological approaches, Organizational symbolism. Integration, differentiation and fragmentation as three perspective approaches to organizational culture
46	M.Sc. Anthropology	ANS 407	Anthropology of Displaced	2020	<ul style="list-style-type: none"> a. Know the peoples perception towards

			Populations		<p>development and displacement</p> <p>b. Understand the role of government and non-government agencies in the process of displacement, resettlement and rehabilitation.</p> <p>c. Understand policy issues relating development and displacement in legal implications of displacement and rehabilitation</p> <p>d. Learn the Socio-Cultural effects of displacement, Socio disorganization, process of disintegration and reintegration</p>
47	M.Sc. Anthropology	ANS-408	Visual Anthropology	2020	<p>a. Know about the concept, scope and Historical Development of visual anthropology</p> <p>b. Know about the appraisal of ethnographic films in cultural context</p> <p>c. Knowledge about descriptive studying of Visual data produced by Cultures</p> <p>d. To understand the ethnographical films, still photos film shootings and commentary</p>
48	M.Sc. Anthropology	ANS -409	Urban Anthropology	2020	<p>a. Exposed to the history of urbanization.</p> <p>b. Understand the environment and ecological processes of urban</p> <p>c. Understand the urbanization and industrialization on cultural complexity</p>

					d. Understand the relevance of anthropology to urban industry, Business and Corporate Sectors; Urbanization and Social Change in India.
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29. Biochemistry

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	BCH101	Biochemical and Biophysical methods	2020	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	BCH 102	Molecular Physiology and community nutrition	2020	<ol style="list-style-type: none"> 1. Gain the knowledge about circulatory and excretory systems. 2. Know the importance of muscular and nervous system. 3. Health benefits and malnutrition of proteins and fats. 4. Know the importance of nutrition in maintenance of health and diseases.
3	BCH 103P	Practical related to Biochemical Preparations and Analysis	2020	<ol style="list-style-type: none"> 1. Learn safety and precautionary measures for working in a laboratory. 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments

				<ol style="list-style-type: none"> 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological samples.
4	BCH 104P	Practical related to Analytical methods	2020	<ol style="list-style-type: none"> 1. Learn how to standardize various biomolecules. 2. Separate biomolecules by paper chromatography and thin layer chromatography 3. Demonstrate separation of protein by electrophoresis. 4. Isolation and spectrophotometric characterization of plant pigments.
5	BCH 105P	Human values and Professional ethics-I	2020	<ol style="list-style-type: none"> 1. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 2. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 3. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 4. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas 5. Gain the knowledge about views on Manu and Yajnavalkya
6	BCH 106	Cell and Biomolecules	2020	<ol style="list-style-type: none"> 1. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 2. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 3. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 4. Understand the concept of structural organization of nucleic acids
7	BCH 201	Energy metabolism	2020	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism. 3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.

				4. Describe the details of lipid metabolism.
8	BCH 202	Metabolism of Nitrogen based molecules	2020	<ol style="list-style-type: none"> 1. Understand the anabolic and catabolic reactions of proteins and aminoacids. 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	BCH 203P	Practical related to Enzymology	2020	<ol style="list-style-type: none"> 1. Learn about estimation of various enzymes in biological sample. 2. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 3. Learn about the factors affecting enzyme activity and determination of K_m. 4. Demonstrate the Immobilization of enzymes.
10	BCH 204P	Practical related to Molecular Biology	2020	<ol style="list-style-type: none"> 1. Isolate nucleic acids from various sources. 2. Estimate the nucleic acids quantitatively. 3. Determine the melting temperature. 4. Determine the purity of DNA by UV method.
11	BCH 205	Human values and Professional ethics-II	2020	<ol style="list-style-type: none"> 1. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 2. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 3. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 4. Understand the Ethical theory, Ecological crisis, Pest control,

				<p>Pollution and waste, Climate change, Energy and population.</p> <p>5. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy.</p>
12	BCH 206	Enzymology	2020	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behavior and allosteric regulation.
13	BCH 301	Microbial Biochemistry and Genetics	2020	<ol style="list-style-type: none"> 1. Understand the basics of microbiology like nomenclature and classification of microorganisms, understand the various biological and non-biological method to control microorganisms 2. The student will learn about different mode of nutrition in microorganisms and about viruses - Isolation, purification and characterization. 3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. 4. Gain knowledge in bacterial genetics includes the different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism(CRISPR) and Describe the various types of mutations and its effect.
14	BCH 302	Molecular Biology	2019	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in

				<p>prokaryotes and eukaryotes.</p> <ol style="list-style-type: none"> Learn about genetic code and their evolution. Gain knowledge in Different stages and components of protein synthesis.
15	BCH 303P	Practical related to Microbiology	2020	<ol style="list-style-type: none"> Handle the microscope. Learn Methods of sterilization and preparation of various culture media, Purification techniques. Identification of isolated bacteria, and Growth curve of microorganism. Learn Staining techniques for bacteria and yeast. Gain knowledge in the Preparation of wine from Grapes. Production and estimation of alcohols, citric acid, lactic acid etc.
16	BCH 304P	Practical related to Clinical Biochemical Analysis	2020	<ol style="list-style-type: none"> Collect and maintain the biological samples for clinical assay. Estimate the blood and serum enzymes for diagnosis of diseases. Qualitatively analyse the abnormal constituents in urine. Work with diagnostic kits
17	BCH 305 Generic Elective (Two papers out of three)	<ol style="list-style-type: none"> Molecular Endocrinology Clinical Biochemistry Cell and Developmental Biology	2020	<ol style="list-style-type: none"> Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
18	BCH 305 B	Clinical Biochemistry	2020	<ol style="list-style-type: none"> Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract.

				4. Investigate the serum enzymes in liver
19	BCH-305c	Cell and Developmental Biology	2020	<ol style="list-style-type: none"> 1. Acquire knowledge on basic concepts of Developmental Biology. 2. Gain the proficient knowledge about zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Acquire knowledge about biomembrane concept and various membrane transport systems
20	BCH 306 Open Elective to others	<p>a) General Biochemistry</p> <p>b) Environmental Biochemistry</p>	2020	<ol style="list-style-type: none"> 1. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 2. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 3. Understand the concept of structural organization of nucleic acids. <ol style="list-style-type: none"> 1. Describe the Structure of porphyrins, Chemistry and functions of water and fat soluble vitamins. 2. Students will be able to know how to conserve natural resources for future. 3. Students will be able to describe differing types of <i>ecosystems</i> and their characteristic features. 4. Gain the knowledge about different types of pollution in the environment. 5. Know the Relation between human population and environment. <ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the

		c)Experimental aspects related to analytical methods		instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
21	BCH 401	Genetic Engineering	2020	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research. 5. principle, Bioinstrumentation and applications of spectroscopy techniques.
22	BCH 402	Technical Writing, Biostatistics and Bioinformatics	2020	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in biological sequence analysis
23	BCH 403P	Practical related to Immunology and Hematology	2020	<ol style="list-style-type: none"> 1. Collect the blood samples and handle the microscope. 2. Analyze the blood samples. 3. Expert in immunodiffusion and immunoelectrophoresis techniques
24	BCH 404P	Practical/Project work	2020	
25	BCH 405	a) Immunology	2020	a. Gain knowledge on different types of antigens, antibodies and

	Generic Elective	<p>b) Applied Biochemistry</p> <p>c) Plant Biochemistry</p>		<p>how different types of antibodies are produced.</p> <p>b. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>c. Gain knowledge on undesirable immunological reactions and their complication in health management.</p> <p>d. 4.Apply knowledge in disease diagnosis through serological tests.</p> <p>1.Gain knowledge in Fermentation Technology and industrial production of chemicals.</p> <p>2. Learn Industrial application of Enzyme Technology.</p> <p>3. Gain knowledge in Applications of hybridoma technology.</p> <p>4. Understand the applications of genetic engineering in biotechnology and Genetically Modified Organisms.</p> <p>5. Understand the Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins;</p> <p>1.Gain knowledge in special features of secondary plant metabolism.</p> <p>2Know the evolutionary studies Origin of basic biological molecules.</p> <p>3Understand the Concepts of natural evolution and population genetics.</p>
26	BCH 406 Open Elective to	a) Research Methodology	2020	<p>1. Discuss the various steps involved in conducting research.</p> <p>2. Learn to apply hypothesis testing via some of the statistical distributions.</p>

	others (For other department t students)			<ol style="list-style-type: none"> 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis <p>1Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates.</p> <p>2Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system.</p> <p>3Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract.</p> <p>4.Investigate the serum enzymes in liver diseases</p>
27		b) Biochemistry of diseases	2020	<ol style="list-style-type: none"> 1. Determine the body composition and body weight by using various methods. 2. To describe the importance of protein and fats. 3. Gain knowledge on vitamins and minerals to maintain health. 4. Aquire knowledge on nutritional importance in different ages in the life

Immuno technology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	Core 1	Biochemical and Biophysical methods	2020	<ol style="list-style-type: none"> 1.Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in

				<p>the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields.</p> <p>4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques</p>
2	Core 2	Molecular Physiology and community nutrition	2020	<p>5. Gain the knowledge about circulatory and excretory systems.</p> <p>6. Know the importance of muscular and nervous system.</p> <p>7. Health benefits and malnutrition of proteins and fats.</p> <p>8. Know the importance of nutrition in maintenance of health and diseases</p>
3	Core 3P	Practical related to Biochemical Preparations and Analysis	2020	<p>1. Learn safety and precautionary measures for working in a laboratory.</p> <p>2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments</p> <p>3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods.</p> <p>4. Gain the knowledge about isolation studies of biological samples.</p>
4	Core 4P	Practical related to Analytical methods	2020	<p>1. Learn how to standardize various biomolecules.</p> <p>2. Separate biomolecules by paper chromatography and thin layer chromatography</p> <p>3. Demonstrate separation of protein by electrophoresis.</p> <p>4. 4. Isolation and spectrophotometric characterization of plant pigments</p>
5	Compulsory Foundation	Cell and Biomolecules	2020	<p>6. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division.</p> <p>7. Understand the classification, structure and biochemical reactions of aminoacids and proteins.</p> <p>8. Describe the classification, structure and biochemical reactions</p>

				<p>of carbohydrates and lipids.</p> <p>9. Understand the concept of structural organization of nucleic acids.</p>
6	Elective foundation	Human values and Professional ethics-I	2020	<p>10. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions.</p> <p>11. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom.</p> <p>12. Know about Purusharthas, Dharma, Artha, Kama, Moksha.</p> <p>13. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas.</p> <p>14. Gain the knowledge about views on Manu and Yajnavalkya.</p>
7	Core 1	Energy metabolism	2020	<p>1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life.</p> <p>2. Describe the importance of Electron transport and ATP production mechanism.</p> <p>3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.</p> <p>4. Describe the details of lipid metabolism.</p>
8	Core 2	Metabolism of Nitrogen based molecules	2020	<p>1. Understand the anabolic and catabolic reactions of proteins and aminoacids.</p> <p>2. Gain knowledge in the importance of aminoacids as biosynthetic precursors.</p> <p>3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders.</p> <p>4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.</p>
9	Core 3	Practical related to	2020	<p>5. Learn about estimation of various enzymes in biological</p>

		Enzymology		<p>sample.</p> <ol style="list-style-type: none"> Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. Learn about the factors affecting enzyme activity and determination of K_m. Demonstrate the Immobilization of enzymes
10	Core 4	Practical related to Molecular Biology	2020	<ol style="list-style-type: none"> Isolate DNA from bacterial, plant and animal cells and RNA from yeast cells. Estimate concentrations of DNA and RNA by conventional methods and UV absorption methods. Determine the melting temperature(T_m) of DNA. Learn procedures for isolation of phage M_{13} and single and double standard M_{13}DNA.
11	Compulsory Foundation	Enzymology	2020	<ol style="list-style-type: none"> Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. Describe the concepts of co-operative behaviour and allosteric regulation
12	Elective foundation	Human values and Professional ethics-II	2020	<ol style="list-style-type: none"> Easily understand the Components, Structure and responsibilities of family and status of women in family and society. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. Understand the Ethical theory, Ecological crisis, Pest control,

				<p>Pollution and waste, Climate change, Energy and population.</p> <p>10. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy</p>
13	Core 1	Microbial Biochemistry and Genetics	2020	<p>1. Understand the basics of microbiology like nomenclature and classification of microorganisms and different modes of nutrition in microorganisms.</p> <p>2. Learn and understand the various biological and non-biological methods to control microorganisms and Biology of subviral agents – Viroids, Prions, Satellite viruses.</p> <p>3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes.</p> <p>4. Gain knowledge in bacterial genetics like different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism (CRISPR) and various types of mutations and their effects</p>
14	Core 2	Immunology	2020	<p>1. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
15	Core 3	Practical related to Microbiology	2020	<p>1. Handle the microscope.</p> <p>2. Learn Methods of sterilization and preparation of various culture media, Purification techniques.</p> <p>3. Identification of isolated bacteria, and Growth curve of microorganism.</p> <p>4. Learn staining techniques for bacteria and yeast.</p> <p>5. Gain knowledge in the Preparation of wine from Grapes.</p> <p>6. Production and estimation of alcohols, citric acid, lactic acid etc</p>
16	Core 4	Practical related to Immunology	2020	<p>1. Perform RBC, WBC count and differential count.</p>

				<ol style="list-style-type: none"> 2. Do all haematological tests that will be done in clinical labs. 3. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 4. Do Heme agglutination tests for identification of different antigens
17	Generic Elective (Two papers out of three)	a) Molecular Biology	2020	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b)Molecular Endocrinology		<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
		c)Cell and Developmental Biology		<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants.

				4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis.
18	Open Elective to others (For other department students)	a) Basics of Immunology	2020	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate and adaptive immunity. 3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation. 4. Apply knowledge in disease diagnosis through serological tests.
		b) Immunotechniques		<ol style="list-style-type: none"> 1. To purify and analyse the antigens and antibodies. 2. To apply different Hybridization techniques and ELISA, RIA. 3. To detect various diseases by application of antiisera. 4. To engineer antibodies and catalytic antibodies and produce drugs to allergies
19	Core 1	Microbial Biochemistry and Genetics	2020	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
20	Core 2	Immunology	2020	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools.

				4.Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
21	Core 3	Practical related to Microbiology	2020	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
22	Core 4	Practical related to Immunology	2020	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing.
23	Generic Elective (Two papers out of three)	a) Molecular Biology	2020	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b) Molecular Biology	2020	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones

				<p>secreted by hypothalamus, pituitary and pineal glands.</p> <p>2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands.</p> <p>3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones.</p> <p>4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones</p>
		c) Cell and Developmental Biology	2020	<p>1.Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins .</p> <p>2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development.</p> <p>3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants.</p> <p>4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis</p>
24	Open Elective to others (For other department students)	c) Basics of Immunology Immunotechniques	2020	<p>1. Gain knowledge on essential features of different types of antigens, antibodies.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation.</p> <p>4. Apply knowledge in disease diagnosis through serological tests.</p>
25	Open Elective (b)	<i>Immunotechniques and their Applications</i>	2020	<p>1. To purify and analyse the antigens and antibodies.</p> <p>2. To apply different Hybridization techniques and ELISA, RIA.</p>

				<p>3. To detect various diseases by application of antiisera.</p> <p>4. To engineer antibodies and catalytic antibodies and produce drugs to allergies.</p>
26	Core 1	<i>Genetic Engineering</i>	2020	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
27	Core 2	<i>Technical Writing, Biostatistics and Bioinformatics</i>	2020	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis.
28	Core 3 P	<i>Practical related to Clinical Immunology, Biostatistics and Bioinformatics</i>	2020	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens

29	Core 4	<i>Project Work</i>	2020	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing
30	Generic Elective (a)	<i>Clinical Immunology</i>	2020	<ol style="list-style-type: none"> 1. Understand different types of immunity and components of the Immune System. 2. Gain knowledge on auto immune diseases, Animal models used to study them and the treatment for them. 3. Familiar with Clinical manifestation of graft rejection, general immunosuppressive therapy and immune tolerance to allografts. 4. Acquire the knowledge on oncogenes, Psychoimmunology and neuroimmunomodulation
31	Generic Elective (b)	<i>Applied And Molecular Immunology</i>	2020	<ol style="list-style-type: none"> 1. Develop skill in production of monoclonal antibodies. 2. How better enzyme immobilization enhances its activity and their industrial and clinical applications. 3. Familiar with different types of vaccines and how they help in prevention of diseases. 4. Acquire the knowledge on IPR and procedures for patent filing
32	General Elective (C)	<i>Immunopharmacology</i>	2020	<ol style="list-style-type: none"> 1. Understand about drug receptors, pharmacodynamics, pharmacokinetics, drug biotransformation. 2. Acquire knowledge on Immunomodulation therapy, malignancy therapy. 3. Gain knowledge on Prostaglandins, thromboxanes, leukotrienes and inhibitors of these molecules formation. 4. Familiar with Nitric oxide and its immunological effects.
33	Open Elective a	<i>Research Methodology</i>	2020	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Acquire hands on training on various computational tools and techniques.

				<p>3. Learn to apply hypothesis testing via some of the statistical distributions.</p> <p>4. To acquire knowledge on research proposals and motivate students towards research</p>
34	Open Elective (b)	<i>Immunological Diseases and Therapeutics</i>	2020	<p>1. Maintain the Clinical Immunology lab with all required standards.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on different types of immunodeficiencies, their treatment and about autoimmune disorders.</p> <p>4. Familiar with Clinical manifestation in graft acceptance or rejection and how immunosuppressive therapy is useful. And about cancer immunotherapy.</p>

30. Botany

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2020	<p>1. The student able to distinguish different species of lower plant groups.</p> <p>2. Cultivation methods of Algae for industrial production of Single Cell Proteins, Agar Agar ,carragin and Neutraceuticals.Discuss the importance of morphological structure, classification, reproduction and economic importance of Algae.</p>
	BOT-102	Taxonomy of Angiosperms	2020	<p>1) Plant identification skills</p> <p>2) Herbaria preparation and documentation.</p>
	BOT-103	Microbiology	2020	<p>1. Isolation and identification of Pathogenic and Non-Pathogenic micro-organisms.</p> <p>2. Methods of cultivation of economically/industrially important microorganisms.</p>

				3. Plant disease identification and control methods.
	BOT-104	Human Values and Professional Ethics - I	2020	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2020	<ol style="list-style-type: none"> 1) Identification of different Algal forms 2) Morphological description and use of Floral Keys for plant identification.
	BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2020	<ol style="list-style-type: none"> 2. Isolation, culture and staining methods for identification of micro-organisms. 3. Diagnosis of Plant diseases based on symptoms and control methods. 3. Histology of vegetative and reproductive structures and isolation
	BOT-201	Plant Ecology	2020	<ol style="list-style-type: none"> 1) Concepts of Ecology Students, relation between biotic and abiotic factors in an ecosystem. 2) Interaction between biotic communities and ecological energetics 3) Environmental pollution, Global warming and Environmental protection strategies and green energy production
	BOT-202	Plant Biochemistry and Metabolism	2020	<ol style="list-style-type: none"> 1) Biosynthesis of plant primary metabolites and chemistry. 2) Plant physiological processes water relation, plant nutrition and energy metabolism, 3) Metabolic changes in response to biotic and abiotic stress

	BOT-203	Plant Development and Reproduction	2020	<ol style="list-style-type: none"> 1. Wood formation and types 2. Reproductive structures. Mode of Reproduction
	BOT-204	Human Values and Professional Ethics - II	2020	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
	BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2020	<ol style="list-style-type: none"> 1. Plant metabolite analysis and metabolic enzyme activity 2. Methods for Phytodiversity analysis.
	BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2020	<ol style="list-style-type: none"> 1) Plant communities 2) Methods for analysis of environmental pollutants 3) Designs of waste water treatment plants. 4) Assessment of effect of Global warming on Plant systems 5) Study of chromosomal morphology and behavior in Mitosis and Meiosis 6) Practical Problem solving on genetic concepts
	BOT-301	Molecular Biology And Techniques	2020	<ol style="list-style-type: none"> 1. Nucleic acids properties and mechanism of DNA replication and damage repair, and Chromatin organization and Cell Cycle regulation 2. Gene expression, processing of Transcripts and Proteins, and mechanisms of regulation of gene expression in Prokaryotes and Eukaryotes. 3. Principles of Microscopy, Nucleic acid and protein separation and identification techniques and methods
	BOT-302	Biodiversity and	2020	<ol style="list-style-type: none"> 1. Knowledge on Phytodiversity, biodiversity centres and types of

		Conservation		Biodiversity. 2. Phytodiversity analysis using Remote sensing Causes for the loss of phytodiversity and conservation strategies
	BOT-303 IE	Biosystematics	2020	1. Biosystematic Categories, 2. Omega Taxonomy 3. Taximetrics and Concept of Species
	BOT-304IE	Molecular Plant Pathology	2020	1. Symptoms based Diagnosis of Plant Diseases 2. Methods of Plant Disease Management and pest control
	Abot-306	Computer Applications and Bioinformatics	2020	1. Computer Operating systems and MS Office 2. The biological databases and Databases 3. Bioinformatics, tools and its applications.
	BOT-307 IE	Plants and Human Welfare	2020	1. Food Yielding Plants as a source of food, fiber and timber. 2. Plants used in curing human diseases and other ailments in traditional medical systems and Veterinary diseases 3. Spices and condiments, Non timber forest products. 4. Preparation and application of Bio fertilizers, Bio pesticides, Bio insecticides, mushroom cultivation and plant based preservatives
	BOT-308 IE	Organic Farming and Mushroom Cultivation	2020	1. Different types of compost preparation and their Nutritive value. 2. Biofertilizers and organic preparations, their marketing and farm management. 3. Vermicompost Technology 4. Identification of types of edible and poisonous mushrooms. 5. Method of cultivation of mushrooms and diseases management
	BOT-309 IE	Gardening and Nursery Techniques	2020	1. Nurseries development and Management and Garden designing for different plant groups 2. <i>In vivo</i> and <i>in vitro</i> plant propagation methods 3. Plant nutrition and protection 4. Types of gardens and nurseries
	Practical-I	Molecular Biology And	2020	1.. Study of Chromosomal Behavior during Mitosis.

		Techniques ; Biodiversity and Conservation		<ol style="list-style-type: none"> 2. Isolation of DNA, RNA and proteins, Quantitative estimation 3. Assignments on DNA structure, Replication and Gene expression 4. Methods for Phytodiversity analysis. 5. Plant diversity conservation methods
	Practical-II	Biosystematics / Molecular Plant Pathology /Computer Applications and Bioinformatics.	2020	<p>Biosystematics</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Molecular Plant Pathology</p> <ol style="list-style-type: none"> 1. Isolation of Pathogenic Fungi and Bacteria. 2. Estimation of Rhizosphere, Phyllosphere, Spermosphere microorganisms by Serial dilution methods. 3. Screening of Botanical Pesticides (plant extracts) against Fungal Pathogens 4. Preparation of Plant Pathology Herbarium <p>Computer Applications and Bioinformatics</p> <ol style="list-style-type: none"> 1. Internet – E-mail and mail attachment Downloading 2. Webpage; Search engines; 3. Visit to DNA and Protein database; NCBI; EMBL, Swiss- Prot ;PDB 4. Use of similarity search tools: NBLAST; PBLAST 5. Use of literature database Virtual library; Agricola; PubMed
	BOT-401	Molecular Genetics & Genomics and Proteomics	2020	<ol style="list-style-type: none"> 1. Genetic basis of inheritance of genes and their mapping in eukaryotes and microbes 2. Molecular marker techniques and construction of genetic and

				<p>physical maps.</p> <ol style="list-style-type: none"> 3. Whole genome sequencing strategies, and structural and functional annotation. 4. Principles and methods of Transcriptome and Proteome analysis. 5. Mechanisms of evolution of genomes, New genes and proteins and construction of Phylogenetic trees. 6. Structural organization of plant genomes, Arabidopsis and rice genomes and applications of genome projects.
	BOT-402	Plant Biotechnology	2020	<ol style="list-style-type: none"> 1. Techniques of Plant Tissue Culture and Applications. 2. Process of r-DNA technology 3. Production of genetically modified crops and Achievements
	BOT-403 IE	Molecular Plant Physiology	2020	<ol style="list-style-type: none"> 1. 1.Signal transduction pathways and Senescence 2. 2.Molecular mechanism of Photosynthesis 3. Synthesis and application of Nanomaterials. 4. Molecular Physiology of Stress and Flowering
	BOT-404 IE	Horticulture and Agricultural Biology	2020	<ol style="list-style-type: none"> 1. Propagation methods for horticultural crops 2. Soil science and fertility management for horticultural crops. 3. Seed production technology of horticultural crops.
	BOT-405 IE	Ethnobotany and Phytomedicine	2020	<ol style="list-style-type: none"> 1. Ethnobotanical knowledge 2. Medicinal plant Cultivation, Multiplication, Collection, Processing and Marketing 3. Sources of Plant Medicines, Formulations, Diagnostic features and their Biological activity.
	Practical – I	Molecular Genetics & Genomics and Proteomics; Plant Biotechnology	2020	<ol style="list-style-type: none"> 1) Isolation of genomic DNA and RNA and Quantification by Spectrophotometry. 2) Preparation of DNA denaturation curve 3) Restriction digestion of DNA, Agarose Gel Electrophoresis 4) PCR amplification of DNA. and RAPD analysis. 5) Precipitation of proteins ,Estimation of protein.

				<ul style="list-style-type: none"> 6) Determination of Isoelectric Point of proteins 7) Separation of proteins by SDS-PAGE and size determination 8) Problems related to genomics, proteomics and molecular evolution 9) Establishment of callus, organ and cell cultures
	Practical - II	Molecular Plant Physiology; Horticulture and Agricultural Biology; Ethnobotany and Phytomedicine	2020	<p>BOT-403 IE : Molecular Plant Physiology</p> <ul style="list-style-type: none"> 1. Extraction and Estimation of Chlorophyll pigments. 2. Assay of enzyme activity 3. Estimation of Carbohydrate, proteins and separation 4. Seed viability and germination 5. Metabolite accumulation under stress <p>BOT-404 IE: Horticulture and Agriculture Biology</p> <ul style="list-style-type: none"> 1. Isolation, Characterization and Identification of Rhizobium 2. Outdoor cultivation of Blue green Algae 3. Vermicompost production 4. Multiplication of VAM and Preparation Biofertilizers; 5. Establishment of nursery, different containers, soil transplantation techniques. 6. Plant propagation – layering, cutting, grafting. 7.. Layout and Designing of gardens and Lawns. <p>BOT-405 IE: Ethnobotany and Phytomedicine</p> <ul style="list-style-type: none"> 1. Recording medicinal practices and herbal formulations of tribal medicine by interviews and field study and preparation of report. 2. Development of medicinal plant nurseries in botanical garden. 3. Practical Methods of Cultivation, Propagation, Conservation and Protection of important Medicinal plants to develop familiarity. 4. Micro-propagation of Medicinal plants and Production of

				<p>Callus from different Explants for Specific Biologically active Ingredients.</p> <p>5. Practical demonstration of collection, processing and storage of Plant Medicines.</p> <p>6. Demonstration of drug Formulation and Herbal cosmetics.</p> <p>7. Organoleptic examination and physical and chemical properties.</p>
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31. Biotechnology

	PROGRAMME	COURSE CODE	COURSE TITLE	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	M.Sc. Biotechnology	BTH 101	Structure and Functions of Biomolecules	2019	<ol style="list-style-type: none"> 1. Understand the classification of carbohydrates and their biochemical functions. 2. Correlate the reactions of amino acids that are basis for identification tests and biochemical pathways. 3. Know the structure of different classes of lipids and their roles in biological systems. 4. Comprehend the structure and functions of nucleic acids
		BTH 102	Advanced Tools and Techniques	2019	<ol style="list-style-type: none"> 1. Learn about various techniques for isolation and concentration of macromolecules. They will also understand the principles and applications of different Microscopes 2. Understand the techniques of chromatography, centrifugation and electrophoresis 3. Achieve a basic understanding of characterization of biomolecules by different

					<p>Spectroscopic techniques</p> <p>4. They learn safety measures in handling radioisotopes and familiarize with the various radioisotope tracer techniques and their role in biology.</p>
		BTH 103P	Practicals related to Biochemical Preparations and Analysis & Analytical Methods	2019	1. Acquire the skill to perform experiments related to Biochemical preparations and advanced tools and techniques
		BTH 104P	Practicals related to Microbiology and Immunology	2019	1. Obtain the skill to perform experiments related to Microbiology and Cell Biology
		BTH 105	Microbiology and Immunology	2019	<p>5. Acquire the knowledge on classification and structure of different microorganisms</p> <p>6. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures</p> <p>3. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
		BTH 106	Human values and Professional ethics-I	2019	1. Learn the importance of Human values and Professional ethics
		BTH 201	Enzymes and Intermediary Metabolism	2019	<p>1. Gain knowledge on different enzymes and their significance</p> <p>2. Correlate how the living organisms exchange energy and matter with the surroundings for their survival, and store free energy in the form of energy-rich compounds</p> <p>3. Recognize how the catabolic breakdown of the substances is associated with release of free</p>

					energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways 4. Apply the knowledge of metabolic pathways to biotechnological and biochemical research.
		BTH 202	Molecular Biology	2019	1. Understand the biochemical composition and genome organization in living cells 2. Learn about the mechanism of tissue specific transcription and role of RNA polymerases 3. Appreciate the correlation of genetic code with protein synthesis in prokaryotic and eukaryotic cells. 4. Gain insights of mechanism of gene expression and regulations
		BTH-203P	Practicals related to Enzymology & Molecular Biology	2019	Learn the skill to perform experiments related to Enzymology and Molecular Biology
		BTH-204P	Practicals related to Biostatistics and Bioinformatics	2019	Learn the skill to perform experiments related to Immunology and analyze data using various biostatistical methods.
		BTH 205	Research Methodology, Biostatistics and Bioinformatics	2019	4. Discuss the various steps involved in conducting research 5. Learn to apply hypothesis testing via some of the statistical distributions 6. Develop understanding about Biological data and database search tools 7. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
		BTH 206	Human values and Professional ethics-II	2019	Learn the importance of Human values and Professional ethics

		BTH 301	Genetic Engineering	2019	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes 2. Acquire knowledge on vectors for construction of genomic libraries and cDNA libraries 3. Understand the mechanism of cDNA synthesis 4. Know the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research.
		BTH-302	Cell and Tissue culture	2019	Gain the knowledge regarding plant and animal cell cultures. Get the skill to perform micropropagation.
		BTH 303P	Practicals related to Genetic Engineering, Cell and Tissue culture & Food and Industrial Biotechnology	2019	Learn the skill to perform the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research
		BTH 304 a.	Bioprocess Engineering and Technology	2019	<ol style="list-style-type: none"> 1. Handle the axenic cultures of industrially important microbes and appreciate the relevance of microorganisms from industrial context. 2. Gain an overview on design, operations and types of fermentation systems 3. Calculate yield and production rates in a biological production process, and also interpret data 4. Apply knowledge on separation and purification of end products of fermentation
		BTH 304 b.	Legal, Ethical and Implications of Biotechnology	2019	<ol style="list-style-type: none"> 1. Develop awareness on types IPR and patenting process 2. Understand legal and ethical controversies in biotechnological innovations 3. Apply knowledge in providing safety of food,

					<p>water and environment</p> <p>4. Gain overview of GM crops and microbes and their impact on environment</p>
		BTH 304 c.	Food and Industrial Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire knowledge on food preservation, processing and control measures for food poisoning 2. Establish indoor and outdoor cultivation units for algal cultivation 3. Learn effective management of solid waste for energy production. 4. Appreciate the industrial role of microorganisms in production of biomolecules
		BTH 305 a	Plant Tissue Culture	2019	<ol style="list-style-type: none"> 1. Learn important milestones in the plant tissue culture and understand the concepts and principles of Plant tissue culture. 2. Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somatic embryogenesis, synthetic seeds and applications. 3. Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. 4. Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization.
		BTH 305 b	Bioethics	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on IPR and procedures for patent filing 2. Understand the Legal and Ethical aspects of gene therapy - cloning - Manipulation of

					<p>human genome -Technology transfer.</p> <ol style="list-style-type: none"> 3. Learn role of Government, Industries and society in promoting, accepting and regulating the rDNA research 4. Develop understanding on Environmental and Health aspects of Biotechnology
		BTH 305 c	Bioinformatics	2019	<ol style="list-style-type: none"> 1. Develop understanding about Biological data and database search tools 2. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis 3. Learn about pathway and enzyme databases, Sequence submission tools 4. Develop understanding on protein folding and its significance
		BTH 401	Environmental Biotechnology	2019	<ol style="list-style-type: none"> 1. Learn the relation between biotic and abiotic factors in different ecosystem models and predict how changes in free energy availability affect ecosystems. 2. Appreciate the role of microorganisms in biodegradation and pollution detection 3. Develop skill on large scale production and applications of bio pesticides and bio fertilizers fin agriculture 4. Apply knowledge on solid waste management and reclamation of waste water
		BTH 402	Plant Biotechnology	2019	<ol style="list-style-type: none"> 1. Develop skill in production of transgenic plants resistant to biotic and abiotic stress 2. Apply knowledge for industrial production of plant metabolites 3. Cultivate the micro and macro algae of

					commercial importance on large scale 4. Identify different plant pathogens and apply biological control methods
		BTH 403	Project work	2019	1. Select the appropriate research design and develop appropriate research hypothesis for a research project and acquire hands on training on various tools and techniques employed in executing the project.
		BTH 404 a	Pharmaceutical Biotechnology	2019	1. Gain knowledge on preparation and formulations of different drugs 2. Develop skill on commercial production of pharmaceutical products for human welfare 3. Learn the techniques of drug validation and vaccine production 4. Understand the bioethical principle, values, concepts and social and judicial implications of pharmaceutical biotechnology
		BTH 404b	Animal Biotechnology	2019	Understand the organization of reproductive organs and advances in contraception research 2. Learn the techniques of In Vitro Fertilization and artificial insemination 3. Develop skill in molecular techniques for production of transgenic animals 4. Apply knowledge on molecular farming for production of vaccines and hormones
		BTH 404c	Applications Biotechnology	of 2019	1. Acquire the knowledge on applications of plant, animal and environmental biotechnology 2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3. Establish and maintain cell lines for vaccine

					production 4. Apply knowledge on waste management and recycling for environmental protection
		BTH 404d	Practicals Related to Environmental Biotechnology & Plant	2019	1. Learn the techniques related to Environmental and Plant biotechnology
		BTH 405a	Tools in Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on analysis of DNA replication to map site specific points of replication 2. Learn to apply DNA microarrays to detect replication origins 3. Understand the functions of helicase and polymerase in DNA replication 4. Acquire knowledge on sophisticated programmed of genome replication
		BTH 405b	Immunology	2019	<ol style="list-style-type: none"> 1. Out line, compare and contrast the key mechanism of innate and adaptive immunity 2. Apply knowledge in disease diagnosis through serological tests 3. Develop skill in production of monoclonal antibodies 4. Gain knowledge on undesirable immunological reactions and their complications in health management
		BTH 405c	Applications of Biotechnology	2019	<ol style="list-style-type: none"> 1. Acquire the knowledge on applications of plant, animal and environmental biotechnology 2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3. Able to establish and maintain cell lines for vaccine production 4. Apply knowledge on waste management and recycling for environmental protection

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32. Chemistry
Analytical Chemistry

S.No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	CHE-101	Inorganic Chemistry I	2020	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2.	CHE-102	Organic Chemistry I	2020	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereo controlled reactions 2. To ascertain the stereochemistry of the

				<p>products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents.</p> <ol style="list-style-type: none"> To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3.	CHE-103	Physical Chemistry- I	2020	<ol style="list-style-type: none"> To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
4.	CHE-104	Inorganic Practical- I	2020	<ol style="list-style-type: none"> To demonstrate mastery of basic semi-micro qualitative analysis of simple salts

				<p>and interprets analytical data and will make scientific claims that are supported by the observations</p> <ol style="list-style-type: none"> To familiarize with techniques of titration and calculation of errors
5.	CHE-105	Organic Practical-I	2020	<ol style="list-style-type: none"> To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules.
6.	CHE-106	Physical Practical I	2020	<ol style="list-style-type: none"> To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different To calibrate the statistical data
7.	CHE-107	General Chemistry-I	2020	<ol style="list-style-type: none"> To know about mean and median values, standard deviation and coefficient of variation. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
8.	CHE-108	Human Values and Professional Ethics – I	2020	<ol style="list-style-type: none"> To know about the needs and importance of professional ethics. To analyze nature of Values, basic Moral Concepts character and Conduct. To gain knowledge on individual and society ethical values, ahimsa, satya and

				<p>brahmacharya</p> <p>4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics</p>
9.	CHE - 201	Inorganic Chemistry II	2020	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reaction
10.	CHE-202	Organic Chemistry II	2020	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of

				<p>ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.</p>
11.	CHE -203	Physical chemistry II	2020	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem. 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
12.	CHE 204	Inorganic Chemistry	2020	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes
13.	CHE 106	Core practical II: Organic Chemistry	2020	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior

				of different components and mechanisms
14.	CHE 206	Core practical II: Physical Chemistry	2020	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
15.	CHE 207	General Chemistry II	2020	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
16.	CHE 208	Human Values and professional ethics-II	2020	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
17.	CHE-AC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning

				<p>calorimetry.</p> <ol style="list-style-type: none"> To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
18.	CHE AC 303 & 304	Core-Practical: Classical Methods of Analysis	2020	<ol style="list-style-type: none"> To know the basic principles of instrumental methods of analysis To gain knowledge on chemistry of alloys To Understand the complexity, theory and working principle of colourimetry To familiarize with laws of colorimetric titrations
19.	CHE-AC-305A Chemistry III	Organic Chemistry III	2020	<ol style="list-style-type: none"> To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions

				<ol style="list-style-type: none"> 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
20.	CHE-AC-305B	Physical Chemistry III	2020	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2V} point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
21.	CHE AC 306	Spectral Techniques	2020	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
22.	CHE AC 306	Chromatographic Techniques	2020	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques.

				<ol style="list-style-type: none"> 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase.
23.	CHE-AC-401	Quality Control and General Principles	2020	<ol style="list-style-type: none"> 1. To diagnose problems in the quality improvement process and Explain each total quality implementation phase 2. To know about theoretical basis for the use of organic reagents in inorganic analysis. 3. To understand different types of kinetic methods and their evaluation and to determine the kinetics of enzyme 4. To understand the oxidation reactions with Ce (IV) sulphate solutions and applications of complexometric titrations
24.	CHE-AC 402	: Instrumental Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and

				<p>environmental samples analysis</p> <p>4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I₂ liberations and Ce⁴⁺ liberation in solutions</p>
25.	CHE AC 403	Core practical I: Analytical Chemistry- Practical	2020	<ol style="list-style-type: none"> 1. Understand the common laboratory techniques including separation techniques 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. Gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures 4. Familiarize with interpretation of data to structures by NMR.
26.	CHE AC 404	Project Work	2020	<ol style="list-style-type: none"> 1. Perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour 3. Analysing and compiling the data and results in a chronological order in the form of dissertation. 4. Preparation of dissertation
27.	CHE-AC-405	Applied and Environmental Aspects	2020	<ol style="list-style-type: none"> 1. Have an idea about preparation of sampling, decomposition, separation and preconcentration of metal ions etc. 2. Gain experience on agrochemicals and fertilizers and their analysis 3. Have an idea on the analysis of fuels,

				alloys and explosives 4. Experience with environmental pollution monitoring techniques
28.	CHE-AC-406	Bioinorganic, Bioorganic, Biophysical Chemistry	2020	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
29.	CHE AC 406A	Drug Chemistry	2020	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
30.	CHE AC 406 B	Electroanalytical Techniques	2020	<ol style="list-style-type: none"> 1. Know how to interpret potentiometry and conductometry 2. Know the Interpretation of results while adhering to DC Polarography 3. Know the Analysing and compiling the data and results in polarography . 4. Familiarize Types of ion sensitive electrodes

M.Sc., Environmental Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1.	CHE-101	Inorganic Chemistry- I	2020	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes. 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
	CHE-102	Organic Chemistry I	2020	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2020	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy,

				<p>Schrodinger wave equation and the postulates of Quantum Mechanics.</p> <ol style="list-style-type: none"> To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
	CHE-104	Inorganic Practical- I	2020	<ol style="list-style-type: none"> To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations. To familiarize with techniques of titration and calculation of errors
	CHE-105	Organic Practical-I	2020	<ol style="list-style-type: none"> To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
	CHE-106	Physical Practical I	2020	<ol style="list-style-type: none"> To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different To calibrate the statistical data
		General Chemistry-I	2020	<ol style="list-style-type: none"> To know about mean and median values, standard

CHE-107				<p>deviation and coefficient of variation</p> <p>2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS</p>
CHE-108	Human Values and Professional Ethics – I		2020	<p>1. To know about the needs and importance of professional ethics.</p> <p>2. To analyze nature of Values, basic Moral Concepts character and Conduct</p> <p>3. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics</p>
CHE-201	Inorganic Chemistry- II		2020	<p>1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes</p> <p>2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams</p> <p>3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods</p> <p>4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions</p>
CHE-202	Organic Chemistry -II		2020	<p>1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments</p> <p>2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions</p> <p>3. To learn the synthesis of three and four membered</p>

				<p>heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.</p>
CHE-203	Physical Chemistry- II	2020	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system 	
CHE-204	Inorganic Practical- II	2020	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures 2. To acquire knowledge in the preparation of metal complexes 	
CHE-205	Organic Practical-II	2020	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms. 	

CHE-206	Physical Practical -II	2020	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsagar equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.
CHE-207	General Chemistry-II	2020	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
CHE-208	Human Values and Professional Ethics – II	2020	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
CHE-EC-301	Physical Chemistry III	2020	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy 4. To study the concepts on heat of dissolution, regular

				solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
CHE-EC-302	Spectroscopy Applications	2020	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique 	
CHE-EC-303	Water Analysis	2020	<ol style="list-style-type: none"> 1. To get an idea about water analysis 2. To understand the basic principles of soil analysis 3. To familiarize with instrumentation of potentiometric techniques 4. To gain knowledge on flame photometry and its applications 	
CHE-EC-304	Instrumental Methods of Analysis-I	2020	<ol style="list-style-type: none"> 1. To get an idea about water analysis 2. To understand the basic principles of soil analysis 3. To familiarize with instrumentation of potentiometric techniques 4. To gain knowledge on flame photometry and its applications 	
CHE-305	<p>(a) Organic Chemistry III</p> <p>(b) Inorganic Spectroscopy & Thermal Methods of Analysis</p>	2020	<p>305 A</p> <ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules. 2. To gain knowledge in the synthesis of different 	

		(c) Green Chemistry		<p>organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p> <ol style="list-style-type: none"> 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds. <p>305 B</p> <ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
CHE-306		(a) Spectral Techniques or (b) Chromatographic Techniques	2020	<p>306 A</p> <ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups <p>306 B</p> <ol style="list-style-type: none"> 1. To know the stationary and mobile phases in

				<p>chromatographic techniques.</p> <ol style="list-style-type: none"> 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
	CHE-EC-401	Water pollution Monitoring and Environment laws	2020	<ol style="list-style-type: none"> 1. Know about nuclear fission and fusion, uses of solar energy in space heating and water heating, hydropower and water heating, hydropower and production of ethanol from indirect solar energy. 2. Learn physical and chemical properties of water and water complexation in natural and waste water and to understand about global warming, ozone depletion, green house effect and acid rains. 3. Acquire knowledge on composition of inorganic and organic contaminants in soil, soil corrosion and industrial applications of green chemistry. 4. Get knowledge on various methods of solid waste collection and its disposal
	CHE-EC-402	Air pollution, control Methods-Noise and Thermal pollution	2020	<ol style="list-style-type: none"> 1. Acquire knowledge on disease causing agents in water 2. Learn about the removal of suspended and dissolved solids present in waste water 3. Understand different uses of micro-organisms in environmental protection 4. Know different world life acts such as forest conversion act, water control pollution act and air prevention and control act
	CHE-EC-403	Instrumental Methods of analysis-II	2020	<ol style="list-style-type: none"> 1. To know the basic principles of conductometry and analysis of acids and halides. 2. Colorometric estimation of iron and manganese. 3. To have an idea about working principles of IR, AAS, Spectrofluorimetry, Gas chromatography and HPLC.

				4. To familiarize with interpretation of data
	CHE-EC-404	Project work	2020	<ol style="list-style-type: none"> 1. To identify research problem, propose the hypothesis and to collect literature. 2. To perform research designs & experiments 3. To tabulate research result. 4. To conclude research outcomes in the form of dissertation
	CHE-405	<p>(a) Energy, Environment and Soils</p> <p><i>(b) Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2020	<p>405 A</p> <ol style="list-style-type: none"> 1. Acquire knowledge on air pollutants, air pollution sampling measurements and analysis caused due to sulphur dioxide, carbon monoxide, nitrogen dioxide, oxidants, ozone, hydro carbons and particulate matter. 2. Learn about different control methods and adsorption of solids and liquids, gas analysis eluents viz., nitrogen oxides, carbon monoxide and hydrocarbons. 3. Understand pollution caused by vehicle emission, different industries, cement plants, steel mills and petroleum refineries. 4. Know about noise and thermal power project pollutions and their effect on human health. <p>405 B</p> <ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters

	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2020	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry. 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes.
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M.Sc., Inorganic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2020	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.

	CHE-102	Organic Chemistry I	2020	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents. 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2020	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
	CHE-104	Inorganic Practical- I	2020	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations.

				2. To familiarize with techniques of titration and calculation of errors
	CHE-105	Organic Practical-I	2020	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
	CHE-106	Physical Practical I	2020	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
	CHE-107	General Chemistry-I	2020	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS
	CHE-108	Human Values and Professional Ethics – I	2020	<ol style="list-style-type: none"> 1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics

CHE-201	Inorganic Chemistry- II	2020	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams. 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods. 4. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods.
CHE-202	Organic Chemistry -II	2020	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions. 4. To understand the structural elucidation and synthesis of alkaloids using specific reagents
CHE-203	Physical Chemistry- II	2020	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems. 2. To learn Gibbs adsorption isotherm, BET equation

				<p>and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants.</p> <p>3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem.</p> <p>4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2020	<p>1. To separate and determine the two component mixtures.</p> <p>2. To acquire knowledge in the preparation of metal complexes</p>
	CHE-205	Organic Practical-II	2020	<p>1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the</p> <p>2. To get knowledge about the chemical behavior of different components and mechanisms</p>
	CHE-206	Physical Practical -II	2020	<p>1. To study the determination of cell constant and verification of Onsagar equation, strength of strong</p> <p>2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry</p>
	CHE-207	General Chemistry-II	2020	<p>5. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and</p> <p>6. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC</p>
	CHE-208	Human Values and Professional Ethics – II	2020	<p>1. To understand the concepts of human values, responsibilities of family values and status of women in family and society.</p>

				<ol style="list-style-type: none"> 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 4. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-IC-301	Inorganic Spectroscopy and Thermal Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry 2. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 3. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy
	CHE-IC-302	Organic Spectroscopy and Applications	2020	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE-IC-303 and CHE-IC-304	Core practical I & II Inorganic Chemistry	2020	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental

				<p>methods of analysis.</p> <ol style="list-style-type: none"> To familiarize with the analysis of organometallic complex salts. To Understand the complexity, theory and working principle of colourimetry. To gain knowledge on analysis of organic components
	CHE-305A	Organic Chemistry III	2020	<ol style="list-style-type: none"> To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds
	CHE-305B	Physical Chemistry III	2020	<ol style="list-style-type: none"> To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches,

				<p>selection rules and Vibrational- rotational Raman spectroscopy.</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE IC 306 A	Spectral Techniques	2020	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE IC 306 B	Chromatographic Techniques	2020	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques. 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase
	CHE-IC-401	Coordination compounds, Organo metallic chemistry & Chemistry of non-transition elements	2020	<ol style="list-style-type: none"> 1. To Gain an extensive knowledge about dinitrogen complexes of Ru(II), Os(II), Co(I), Mo(0) and dioxygen complexes of Ir(I) and Rh(I) and on cycloheptatriene and tropylium complexes of oxidative, reductive elimination reactions 2. To understand mechanism, stereochemical aspects and regeneration of catalyst in olefin hydrogenation (Wilkinson's catalyst), olefin oxygenation (Wacker process or Smidt reaction), Olefin hydroformylation and Fischer –Tropsch process.

				<ol style="list-style-type: none"> 3. To study the examples of metal complexes having metal-metal single or multiple bonds and analyse the spectroscopic evidences for the presence of metal-metal bond. 4. To understand the synthesis and structures of boranes, carboranes, borazines, silicates carbides, peroxy compounds and inter halogens, pseudohalides
	CHE-IC-402	Instrumental Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis. 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I- and S₂-) by using I₂ liberations and Ce⁴⁺ liberation in solutions
	CHE-IC-403	Instrumental Methods of Analysis-II	2020	<ol style="list-style-type: none"> 1. To understand the common laboratory techniques including separation techniques. 2. Polarography, atomic absorption spectroscopy in both emission and absorption mode. 3. To gain knowledge on implementation of gas chromatography and HPLC for separation of mixtures. 4. To Familiarize with interpretation of data to structures by NMR.

	CHE-IC-404	Project work	2020	<ol style="list-style-type: none"> 1. Ability to perform experiments, collection and evaluation of data 2. Interpretation of results while adhering to scientific principles of responsible and ethical behaviour. 3. Analysing and compiling the data and results in a chronological order in the form of dissertation 4. Preparation of dissertation.
	CHE-405	<p>(a) Solid state and Photo Chemistry</p> <p>(b) <i>Bioinorganic, Bioorganic & Biophysical</i></p> <p>(c) Chemistry of Nanomaterials & Functional materials</p>	2020	<p>405 A</p> <ol style="list-style-type: none"> 1. To understand the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF). 2. To understand the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC). 3. To get knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis 4. To improve the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions. <p>405 B</p> <ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron

				<p>transfer processes.</p> <ol style="list-style-type: none"> 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE-406	(a) Drug Chemistry or (b) Electroanalytical Techniques	2020	<p>406 A</p> <ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins. 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs. <p>406 B</p> <ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Organic Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	CHE-101	Inorganic Chemistry- I	2020	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes.

				<ol style="list-style-type: none"> 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule
	CHE-102	Organic Chemistry I	2020	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
	CHE-103	Physical Chemistry- I	2020	<ol style="list-style-type: none"> 1. To know the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics 2. To learn about theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories. 3. To know about Thermodynamic concepts and entropy change in reversible process and irreversible process,

				Gibbs- Duhem equation, calculation of thermodynamic properties. 4. To study the Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification
CHE-104	Inorganic Practical- I	2020		1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
CHE-105	Organic Practical-I	2020		1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
CHE-106	Physical Practical I	2020		1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
CHE-107	General Chemistry-I	2020		1. To know about mean and median values, standard deviation and coefficient of variation. 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.
CHE-108	Human Values and Professional Ethics - I	2020		1. To know about the needs and importance of professional ethics. 2. To analyze nature of Values, basic Moral Concepts

				character and Conduct 3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. 4. To understand values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics
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	CHE-201	Inorganic Chemistry- II	2020	1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry -II	2020	1. To familiarize the mechanisms of E ₁ , E ₂ and E _{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the

				<p>effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents.</p>
	CHE-203	Physical Chemistry- II	2020	<p>5. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems</p> <p>6. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants</p> <p>7. To identify Relation between order of a finite group and its subgroup, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem</p> <p>8. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system</p>
	CHE-204	Inorganic Practical- II	2020	<p>3. To separate and determine the two component mixtures</p> <p>4. To acquire knowledge in the preparation of metal complexes</p>
	CHE-205	Organic Practical-II	2020	<p>3. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the</p> <p>4. To get knowledge about the chemical behavior of different components and mechanisms.</p>
	CHE-206	Physical Practical -II	2020	<p>3. To study the determination of cell constant and verification of Onsagar equation, strength of strong</p> <p>4. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry.</p>
	CHE-207	General Chemistry-II	2020	<p>3. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and</p>

				4. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
	CHE-208	Human Values and Professional Ethics – II	2020	5. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 6. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 7. To gain knowledge on social ethics and understand the characteristics of ethical problems in management. 8. To familiarize environmental ethics, ethical theory and ecological crisis
	CHE-OC-301	Organic Chemistry III	2020	1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds
	CHE-OC-302	Organic Spectroscopy and Applications	2020	1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of

				different molecules which are unique
	CHE OC 303 & 304	Core practical I: Organic Estimations - Practical	2020	<ol style="list-style-type: none"> 1. To gain knowledge about the estimation/percent purity of different organic molecules. 2. To get hands-on-experience with the synthesis and determination of concentrations and purity 3. To acquire knowledge in handling of toxic chemicals in multi step preparation of biologically important 4. To gain experience in the proposal of synthetic routes to functionalized derivatives
	CHE-OC- 305 A	Inorganic Spectroscopy and Thermal Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To know the basic principles of instrumental methods of analysis. 2. To gain knowledge on chemistry of alloys. 3. To Understand the complexity, theory and working principle of colourimetry 4. To familiarize with laws of colorimetric titrations.
	CHE-OC- 305 B	Physical Chemistry III	2020	<ol style="list-style-type: none"> 1. To know the determination of Character Co-ordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle. 2. To learn the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. 4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
	CHE OC 306 (A)	Spectral Techniques	2020	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS. 4. To gain knowledge about Mass spectral fragmentation of

				organic compounds and common functional groups
	CHE OC 306 (B)	Chromatographic Techniques	2020	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques 2. To familiarize applications of different chromatographic methods 3. To Understand the principle of chromatographic techniques. 4. To gain knowledge on the normal phase and reverse phase.
	CHE-OC-401	Organic synthesis I	2020	<ol style="list-style-type: none"> 1. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents 2. Learn about photolytic reactions of carbonyl compounds, conjugated carbonyl derivatives, olefins, conjugated dienes CO₃:To gain knowledge in the determination of allowed or forbidden of chemical reactions <i>viz.</i>, cycloaddition and 3. Learn the methods of preparation, properties, and industrial applications of various addition and condensation 4. Familiarize with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents
	CHE-OC 402	Organic Synthesis II	2020	<ol style="list-style-type: none"> 1. Familiarize with functionalization and interconversion of functional groups and the concept of organic synthesis by retrosynthetic approach 2. Gain knowledge in the formulation of synthetic routes for naturally occurring drugs. 3. Understand quinoline, acridine and guanidine group of alkaloids as antimalarials and to familiarize with the role of functioning of broad spectrum antibiotics. 4. Acquire knowledge about the classification, properties, structure & conformation and biological functions of peptides/proteins
	CHE OC 403	Core practical I: Spectral Identification of	2020	<ol style="list-style-type: none"> 1. Calculate λ max values. 2. Ascertain functional groups.

		Organic Compounds		<ol style="list-style-type: none"> 3. Interpret the spectral data to the structure and stereochemistry of the molecules. 4. Analyse the fragmentation pattern of the molecules.
	CHE OC 404	Practical II: Project Work	2020	<ol style="list-style-type: none"> 1. Identify the problem, to collect the literature and understanding parameters to design the problem. 2. Perform experiments to synthesize the molecules with desired stereochemistry adopting modern techniques 3. Collect and interpretation of the data to the structures 4. Presentation of the data in the form of dissertation
	CHE-OC-405A	Heterocycles and Natural Products	2020	<ol style="list-style-type: none"> 1. Familiarize with the synthetic routes of five membered heterocycles with two heteroatoms and to justify the site of 2. Acquire knowledge on the synthetic methodologies of benzofused and six membered heterocycles and the effect of 3. Familiarize with the structural elucidation and synthesis of naturally occurring steroids and hormones 4. Know about isolation, structural determination and synthesis of flavonoids and isoflavonoids
	CHE-OC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2020	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes. 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters
	CHE OC 406A	Drug Chemistry	2020	<ol style="list-style-type: none"> 1. Know about natural products 2. Know Interpretation of cardiovascular drugs. 3. Know the Analyzing about prostaglandins 4. Know the Definition, Classification, Nomenclature, Structure

				and Synthesis of anti-inflammatory drugs.
	CHE 406B	OC	Electroanalytical Techniques	2020
				<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

M.Sc., Physical Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHE-101	INORGANIC CHEISTRY I	2020	<ol style="list-style-type: none"> 1. To understand the key features of coordination compounds, Crystal Field Theory, magnetic properties and bonding in transition metal complexes 2. To learn about the polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules. 3. To explain the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions. 4. To gain knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.
2	CHE-102	Organic Chemistry I	2020	<ol style="list-style-type: none"> 1. To detect stereochemical structures of the molecules, stereoselective and stereocontrolled reactions. 2. To ascertain the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types

				<p>of aromatic substitution reactions, their mechanism and the effect of substituents</p> <ol style="list-style-type: none"> 3. To know the concept of isotope effects, potential energy diagrams and transition states in different intermediates 4. To familiarize with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids
3	CHE 104	Core practical I: Inorganic Chemistry	2020	<ol style="list-style-type: none"> 1. To demonstrate mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations 2. To familiarize with techniques of titration and calculation of errors
4	CHE 105	Core practical I: Organic Chemistry	2020	<ol style="list-style-type: none"> 1. To familiarize the systematic procedures of analysis of organic components, conformational tests for various functional groups 2. To understand the mechanisms and familiarize with methodologies to prepare biologically important molecules
5	CHE 106	Core practical I: Physical Chemistry	2020	<ol style="list-style-type: none"> 1. To study the determination of critical solution temperature, eutectic composition, distribution coefficient, adsorption of different 2. To calibrate the statistical data
6	CHE-107	General Chemistry I	2020	<ol style="list-style-type: none"> 1. To know about mean and median values, standard deviation and coefficient of variation 2. To acquire knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS

7	CHE 108	Human Values and Professional Ethics-I	2020	<ol style="list-style-type: none">1. To know about the needs and importance of professional ethics.2. To analyze nature of Values, basic Moral Concepts character and Conduct3. To gain knowledge on individual and society ethical values, ahimsa, satya and brahmacharya.4. To understand values of Bhagavd Gita, various –5. /*religions, religious tolerance, Gandhian ethic--
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	CHE - 201	Inorganic Chemistry II	2020	<ol style="list-style-type: none"> 1. To familiarize with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes 2. To know about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams 3. To understand about the laws of Hunds, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Farady methods 4. To gain knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions
	CHE-202	Organic Chemistry II	2020	<ol style="list-style-type: none"> 1. To familiarize the mechanisms of E_1, E_2 and E_{1CB} reactions, stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments. 2. To learn the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions. 3. To learn the synthesis of three and four membered heterocycles, mechanism of ring

				<p>opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>4. To understand the structural elucidation and synthesis of alkaloids using specific reagents</p>
	CHE -203	Physical chemistry II	2020	<ol style="list-style-type: none"> 1. To know about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems 2. To learn Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants. 3. To identify Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem 4. To acquire knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system
	CHE 204	Core practical I: Inorganic Chemistry	2020	<ol style="list-style-type: none"> 1. To separate and determine the two component mixtures. 2. To acquire knowledge in the preparation of metal complexes
	CHE 205	Core practical II: Organic Chemistry	2020	<ol style="list-style-type: none"> 1. To familiarize with binary mixture separation and to gain hands-on-experience in purification of the 2. To get knowledge about the chemical behavior of different components and mechanisms

CHE 206	Core practical II: Physical Chemistry	2020	<ol style="list-style-type: none"> 1. To study the determination of cell constant and verification of Onsager equation, strength of strong 2. To get knowledge on the applications of conductometry, potentiometry, coulometry and pH metry
CHE-207	General Chemistry II	2020	<ol style="list-style-type: none"> 1. To acquire knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and 2. To learn general principles and classifications of chromatographic separations and applications of TLC, GLC
CHE 208	Human Values and professional ethics-II	2020	<ol style="list-style-type: none"> 1. To understand the concepts of human values, responsibilities of family values and status of women in family and society. 2. To acquire knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners 3. To gain knowledge on social ethics and understand the characteristics of ethical problems in management 4. To familiarize environmental ethics, ethical theory and ecological crisis
CHE-PC-301	Physical Chemistry III	2020	<ol style="list-style-type: none"> 1. To know the determination of Character Coordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle 2. To learn the Bragg conditions-Miller Indices-Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals 3. To study the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches,

				<p>selection rules and Vibrational- rotational Raman spectroscopy</p> <p>4. To study the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
	CHE-PC 302	Organic Spectroscopy and Applications	2020	<ol style="list-style-type: none"> 1. To get experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds. 2. To familiarize with the absorption bands of the molecules with specific functional groups 3. To interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided 4. To acquire knowledge about specific fragmentation rules of different molecules which are unique
	CHE PC 303 & 304	Core practical I: Physical Chemistry-practicals I & II	2020	<ol style="list-style-type: none"> 1. To study chemical kinetics of homogeneous solutions 2. To gain knowledge on the determination of different cations by flame photometry 3. To understand the principle and working aspects of conductometric titrations 4. To acquire knowledge on the implementation of colorometric estimations 5. To study chemical kinetics of homogeneous solutions
	CHE PC 305 A	Organic Chemistry III	2020	<ol style="list-style-type: none"> 1. To familiarize with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules

				<ol style="list-style-type: none"> 2. To gain knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents 3. To understand diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions 4. To acquire knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
	CHE-PC- 305 B	Inorganic Spectroscopy and Thermal Methods of Analysis	2020	<ol style="list-style-type: none"> 1. To know about TG and DTA and applications of different scanning calorimetry. 2. To learn zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR 3. To gain knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy 4. To know about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron
	CHE PC 306 A	Spectral Techniques	2020	<ol style="list-style-type: none"> 1. To know the basic principles of spectroscopy. 2. To familiarize with the analysis of various functional groups by using different spectroscopic techniques. 3. To Understand the applications of AAS 4. To gain knowledge about Mass spectral fragmentation of organic compounds and common functional groups
	CHE PC 306 B	Chromatographic Techniques	2020	<ol style="list-style-type: none"> 1. To know the stationary and mobile phases in chromatographic techniques.

				<ol style="list-style-type: none"> 2. To familiarize applications of different chromatographic methods. 3. To Understand the principle of chromatographic techniques 4. To gain knowledge on the normal phase and reverse phase
	CHE-PC- 401	Electrochemistry	2020	<ol style="list-style-type: none"> 1. Know the techniques of deposition of metals, throwing power simultaneous discharge of cations and methods of corrosion protection 2. Learn about electrochemical Batteries, fuel cells and nickel-cadmium batteries 3. Understand electrical double layer systems, sedimentation potential, null points of metals and zeta potential 4. Calculate electrochemical parameters; familiarize mixed ligand systems and reversible systems
	CHE-PC 402	Thermodynamics, Polymers and Solid-state Chemistry	2020	<ol style="list-style-type: none"> 1. Derive Gibbs Duhem equation and to calculate fugacity and chemical potential 2. Calculate excess free energy and entropy, to draw Hildebrand curves and to correlate excess functions and activity coefficients 3. Learn morphology, T_m and T_g points and to calculate transition temperatures and to identify cross linking in polymers 4. Identify magnetic properties of solids, magnetic materials, superconductors and BCS theory
	CHE PC 403	Core practical I: Inorganic Chemistry - Practical	2020	<ol style="list-style-type: none"> 1. To perform titration of mixture of halides and to draw potentiometry curves 2. To learn amperometric titrations and mixtures by polarography

				<ol style="list-style-type: none"> 3. To Correlation of data obtained from IR, AAS, HPLC and GC 4. To Determination of alkanility and purity by pH metry
	CHE PC 404	Project Work	2020	<ol style="list-style-type: none"> 1. To identify research problems and to collect research literature 2. To propose hypothesis of a research problem 3. To perform research experiments 4. To analyse the data and conclude the research outcomes
	CHE-PC-405A	Chemical Kinetics	2020	<ol style="list-style-type: none"> 1. Draw skrabal pH diagram and to separate unimolecular and bimolecular reactions 2. Study laws of photochemistry, to derive stern-volmer equation 3. Identify chromo potentiometry points and to investigate kinetic currents and isotopic effects 4. Learn photochemical thresholds, chemiluminescence
	CHE-PC-405B	Bioinorganic, Bioorganic, Biophysical Chemistry	2020	<ol style="list-style-type: none"> 1. Gain knowledge on metallo proteins in electron transfer processes 2. Know the applications of trace metal ions and metal ions as chelating agents in medicine. 3. Achieve and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally 4. Understand thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters

	CHE PC 406A	Drug Chemistry	2020	<ol style="list-style-type: none"> 1. Know about natural products. 2. Know Interpretation of cardiovascular drugs 3. Analyzing about prostaglandins. Know the 4. Know the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs
	CHE PC 406 B	Electroanalytical Techniques	2020	<ol style="list-style-type: none"> 1. Ability to interpret potentiometry and conductometry 2. Interpretation of results while adhering to DC Polarography. 3. Analysing and compiling the data and results in polarography. 4. Familiarize Types of ion sensitive electrodes

33. Environmental Sciences

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ENV-101	Ecology and Environment	2020	<ul style="list-style-type: none"> • Provide solutions to environmental problems using appropriate tools and techniques. • Develop both a quantitative and qualitative understanding of interactions between organisms and their consequences. • Gain the knowledge of functions of organisms and ecosystem.
2	ENV -102	Environmental Chemistry	2020	<ul style="list-style-type: none"> • Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water and soil. • Apply basic chemical concepts to analyze chemical processes involved in different environmental problems. • By knowing pollution levels in the

				environment best possible fresh environment can be created in different methods like afforestation, natural parks and sanctuaries etc., for human concern.
3	ENV-103P	Practical – I	2020	<ul style="list-style-type: none"> • Imparting practical knowledge about estimation of pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples.
4	ENV-104P	Practical-II	2020	<ul style="list-style-type: none"> • Understanding of various alkalinities present in the water sample by volumetric titration linked with theory. • By knowing water pollution potable water can be drawn out and wastewater can be treated. • By knowing various fertility of the soil can be known which is advantage to farmers for agriculture.
5	ENV-105	Environmental Toxicology and Public Health	2020	<ul style="list-style-type: none"> • To understand the role of toxicants in environment, methods used to quantify toxicity, regulations that govern toxic substances and assessment of risks posed by exposure to toxicants. • Inform, educate, and empower people about the potential hazards of toxic substances to environmental and human health. • By knowing the adverse health problems on human beings, safety, preventing measures can be implemented endemic and pandemic diseases can be controlled.
6.	ENV-106	Human Values and Professional Ethics-I	2020	<ul style="list-style-type: none"> • Describe the human values, understand the commitment and responsibility. • They gain the ability to bring harmony to the society. • By studying human values reformation of man

				and reformation of policy shall be done and harmony of environment and society also can be achieved.
7.	EN-201	Energy and Environment	2020	<ul style="list-style-type: none"> • Explain the key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences. • They explain basic competence regarding environmental impacts arising from different energy carriers and technical solutions. • Enrichment of ecosystem will be achieved.
8.	ENV-202	Environmental Pollution	2020	<ul style="list-style-type: none"> • Analyze sources of pollution, exposure pathways, fate and evaluate consequences of human exposure to pollution and its impacts to environmental quality. • Distinguish the effect of pollutants on human health, economy and wild environments. • Pollution free environment for human life will be achieved.
9.	ENV-203P	Practical-I	2020	<ul style="list-style-type: none"> • Describe the amount of pesticide/insecticide in water/vegetable samples. • To find concentration levels of toxicant by use of instrumental techniques • To estimate physicochemical assessments in different water samples
10.	ENV-204P	Practical-II	2020	<ul style="list-style-type: none"> • Identify the concentration of biochemical by using instrumental methods. • To find an amount of LC50 of various metals in organism. • To estimate the growth rate of fauna at various habitat condensations.
11	ENV-205	Instrumental Techniques and Applications	2020	<ul style="list-style-type: none"> • Integrate a fundamental understanding of the

				<p>underlining physics principles as they relate to specific instrumentation used for atomic, molecular, and mass spectrometry, magnetic resonance spectrometry and chromatography.</p> <ul style="list-style-type: none"> • Environmental potentiality will be achieved. This is indirect benefits to the society. • To understand the analysis and level of concentration of different metals through instrumental techniques.
12	ENV-206	Human Values and Professional Ethics-II	2020	<ul style="list-style-type: none"> • Understand the core values that shape the ethical behaviour. • An ability to apply their broad education towards the understanding of the impact of engineering solutions in a global and societal context. • Making the students to full man, understanding the ethical values.
13	ENV -301	Waste Treatment and Management	2020	<ul style="list-style-type: none"> • Describe the components of solid waste management and the laws governing it. • Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes. • Biodegradation of waste through natural and artificial methods will be achieved.
14	ENV -302	Environmental Assessment, Audit and Economics	2020	<ul style="list-style-type: none"> • Explain the concepts about the Environmental Impact Assessment (EIA) and describe the environment laws, aims and the necessity of EIA. • Critically examine assumptions inherent in impact assessment, examine a range of environmental impact assessments and identify and explore impact assessment fields

				<p>and approaches.</p> <ul style="list-style-type: none"> • Understand the sustainable development and controlling environmental pollution.
15	ENV -303	Practical-I	2020	<ul style="list-style-type: none"> • Understand the degradation of natural resources by constructions of various projects. • Understand requirement of oxygen for growth of organisms to break down organic matter in wastewaters. • Describe the low cost wastewater treatment practices in water demand areas.
16	ENV-304	Practical-II	2020	<ul style="list-style-type: none"> • It helps to explain the relationships between variables of the real-world applications. • Develop the programming techniques and the problem solving skills through programming.
20	ENV-305A	Ecotourism and Eco-restoration	2020	<ul style="list-style-type: none"> • Describe the challenging in Eco-Tourism and wildlife tourism. • Understand values of wildlife and minimizing impact on natural ecosystem due to tourism. • It is joyful to public and society; Government economy also will be generated.
18	ENV-305B	Biodiversity Conservation and Management	2020	<ul style="list-style-type: none"> • Systematically understand biodiversity and its vital role in ecosystem function. • Understand the value of biodiversity and current threats to biodiversity. • Describe Environment of nature
20	ENV-305C	Statistics, Computer Applications and Modeling	2020	<ul style="list-style-type: none"> • Analyze data using standard statistical techniques. • Utilize the Internet Web resources and evaluate on-line e-business system. • Environmental analysis, forecasting of the environment can be achieved.
20	ENV-306A	Natural Resources Conservation	2020	<ul style="list-style-type: none"> • Apply theories and methods with

				<p>interdisciplinary approach towards natural resource management.</p> <ul style="list-style-type: none"> • Critically examine the gap in the resource availability, use and conservation. • In conservation of the environment, employment can be generated.
21	ENV-306B	Environmental Education and Sustainability	2020	<ul style="list-style-type: none"> • Demonstrate an integrative approach to environmental issues with a focus on sustainability. • Communicate complex environmental information to both technical and non-technical audiences. • Students will be enriched about the nature.
22	ENV-401	Water Resources and Watershed Management	2020	<ul style="list-style-type: none"> • Understand water's importance as a precious resource. • Provide a basic understanding of the impact of water and water-related issues in a global, economic, environmental and societal context. • Describe the management of water resources through construction of watersheds for future generations.
23	ENV-402	Remote Sensing and GIS	2020	<ul style="list-style-type: none"> • Building a foundation for understanding Remote Sensing and Geographic Information System (RS-GIS) as a powerful tool for geospatial analysis. • Appreciate the application of RS-GIS techniques to the matrices of environment and Resource management. • Future predictions of the environment will be known about weather, cyclones and research etc.,

24	ENV-403	Practical-I	2020	<ul style="list-style-type: none"> • Analyze the multi elements in various wastewater samples. • Understand the rain water harvesting practices. • Identify the water bodies and evaluate effective sensors and advance technique to extract and mapping the features for various applications.
25	ENV-404	Project Work and Comprehensive Viva-Voce	2020	<ul style="list-style-type: none"> • Understand project characteristics and various stages of a project. • Estimate and cost the human and physical resources required and make plans to obtain the necessary resources. • It helps to develop in contextualization of knowledge, critical thinking and can lead to new innovation ideas.
26	ENV-405 A	Disaster Mitigation and Management	2020	<ul style="list-style-type: none"> • Understand the mitigation approaches, their choices and alternatives. • Develop foundations for hazard, risk and vulnerability assessment.
29	ENV-405 B	Environmental Laws, Policies and Legislation	2020	<ul style="list-style-type: none"> • Understanding judicial response to environmental issues in India. • Acquire the ability to evaluate the role of law and policy in conservation and management of natural resources and prevention of pollution.
28	ENV-405 C	Global Environmental Issues	2020	<ul style="list-style-type: none"> • Predicting the consequences of human actions on the web of life, global economy and quality of human life. • Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and

				<p>sustainable development.</p> <ul style="list-style-type: none"> • International issues will be understood.
29	ENV-406 A	Forest Resources and Management	2020	<ul style="list-style-type: none"> • Demonstrate knowledge of forest vegetation modeling and the ability to forecast its development over time using models of forest growth. • Integrate knowledge of basic biology, physical sciences, forest and wildlife ecology, and social sciences into the stewardship of forest resources. • Through forest management national economy will be improved.
30	ENV-406 B	Environmental Management and Sustainable Development	2020	<ul style="list-style-type: none"> • Ability to analyze environmental management in relation to the major principles of sustainable development. • The ability to work effectively to create environmental management analysis outputs of professional quality, both independently and within team environments.

34. Fishery Sciences & Aquaculture

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	AQC 101	Concepts of Aquatic Ecology	2020	<p>i. Understanding the General Characteristics, Principles of classification, Aquatic EcologyCommunities.</p> <p>ii. To understand the various Physical and chemical characteristics of water.</p>

2	AQC 102	Systematics And External Anatomy of Cultivable Organisms	2020	<p>i. Understand the concepts of finfish and shellfish systematics and anatomy.</p> <p>ii.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	AQC 103 A	Fish Nutrition and Water Quality Management	2020	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	AQC: 103 B	Environmental Monitoring and Bio deterioration	2020	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p>

				<p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	AQC- 104A	Coastal Aquaculture	2020	<p>i.The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of</p>

				Amino acids, inborn errors of metabolism.
6.	AQC 104 B	: Ornamental Fish Culture	2020	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2020	
7.	Practical-1 AQC 105	Identification and Morphology of Cultivable Organisms	2020	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due</p>

				<p>to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	Practical-2 AQC106	Fish Nutrition	2020	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	AQC 107	Human Values and Professional Ethics – I	2020	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and</p>

				<p>techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	AQC 201	Principles of Aquaculture	2020	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	AQC 202	Physiology of Cultivable Organisms	2020	<p>i. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>

				<p>ii. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>iii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
12	AQC 203A	Fresh Water Aquaculture	2020	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	AQC 203B	Capture fisheries	2020	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and</p>

				<p>structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	AQC 204 A	Fishery Economics, Extension and Environmental Management	2020	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	AQC 204 B	Limnology	2020	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be</p>

				<p>analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	Practical-1 AQC205	Soil and Water Characteristics	2020	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and</p>

				<p>techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	Practical-2 AQC206	Physiology of Fin Fish and Shell Fish	2020	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	AQC 206	Human Values and Professional Ethics – II (Audit course)	2020	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	AQC 301	Microbiology and Fish Pathology	2020	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p>

				<p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	AQC 302	Fish Immunology	2020	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases</p>

				in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.
21	AQC: 303A	Cell Biology and Genetics	2020	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
22	AQC 303 B	Bioinformatics In Aquaculture	2020	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
23	Practical's AQC 304	Microbiology and Fish Diseases	2020	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p>

				<p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	Skill oriented course AQC 305	Fish Nutrition Technology	2020	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>
25	Open Elective (For other	a)AQC 306A: Fish Processing Technology	2020	<p>i. Learnt about structure, function and organization of Neurons in the Central nervous</p>

	department students)	b) AQC306B: Pollution and Toxicology		<p>system</p> <p>ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effectively communicate with both specialist and non-specialist audiences/community.</p>
26	AQC 401	Aquaculture Biotechnology	2020	<p>i. Skill development in environmental and occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p>

				vii. To understand how to conserve the wild animals
27	AQC402	Essentials Of Biochemistry	2020	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
28	AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2020	<p>i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>ii. Gained lot of information on different types</p>

	AQC403B	Aquaculture Engineering		<p>of Learning phenomenon and their mechanisms.</p> <p>iii. To understand the how to conserve wild animals and management strategies.</p> <p>iv. To gain the knowledge about wild animals and animal products importance.</p>
29	Practical's AQC 404	Biotechnology And Biochemical Estimations	2020	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	Multidisciplinary course/ project work AQC405	Project Work / Fieldwork	2020	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
31	Open Elective (For other department students)	General Principles and Practices of Aquaculture	2020	<p>i. Understand the evolution of protein structural motifs and domains and associate this with function;</p>

	AQC 406(A)			<p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
32	AQC 406 (B)	Fish Breeding and Hatchery Management	2020	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>

35. Geography

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEG-101	Geomorphology	2020	<ul style="list-style-type: none"> To understand the concept of place and how it is connected to people's sense of belonging to the physical environment, landscape and culture. To understand the fundamental concepts of spatial interaction and

				<p>diffusion, which explain how human activities are influenced by the concept of distance.</p> <ul style="list-style-type: none"> • Toexposedtothenatureofphysicalsystemssuchasgeomorphologicprocessesandnaturalhazards. • Toreadandinterpretinformationondifferenttypesofphysicalfeaturesmaps. • Tolearnhowhuman,physicalandenvironmentalcomponentsoftheworldinteract.
2	GEG-102	Economic Resource Studies	2020	<ul style="list-style-type: none"> • To acquire knowledge about the concepts of resources, classification, models of natural resource processes, their use and misuse, conservation and management of resources for sustainable development • To Provide a comprehensive introduction to basic concepts and key theoretical approaches in economic geography • To Introduce economic geography as a dynamic, diverse and contested body of knowledge • To enable you to apply this knowledge to key social and economic issues in the context of economic globalization
3	GEG-103P	Maps Scales and Map Projections	2020	<ul style="list-style-type: none"> • Toapprisesthestudentsabouttheartandscienceofmapmakingandrepresentation. • Toexplainstheusageofdifferenttypesofprojections • Tofocusontheimportanceofscaleandprojectionintheprocessofrepresentingtheearthssurface
4	GEG-104P	Terrain Mapping Techniques	2020	<ul style="list-style-type: none"> • ToapprisesthestudentsabouttheTerrainmappingtechniques • Toprojecttherepresentationofthelandformsbyusingcontourlines • Toexplainsthemethodsofslopeanalysis • Todeveloptheknowledgeonthethematicmaps • ToUnderstandthedatarepresentationthroughthediagrammaticformandloggraphs

5	GEG-105	Advanced Cartography	2020	<ul style="list-style-type: none"> To apprise the students to various aspects of cartography. To introduce the basic concepts and key theoretical approaches in Advanced Cartography. <p>To describe the art and science of mapmaking and map analysis</p>
6.	GEG-106	Human Values and Professional Ethics-I	2020	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society</p>
7.	GEG-201	Climatology and Oceanography	2020	<ul style="list-style-type: none"> To introduce to the students the fundamentals of atmospheric phenomena, global climate systems and climate change. The atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change. To grasp the techniques for modeling the climate, covering both theoretical and technical aspects. To understand the dynamics of the atmosphere and the overall climatological system. To be able to analyse and interpret climatic data and classification of climate
8.	GEG-202	Principles of Remote Sensing	2020	<ul style="list-style-type: none"> To focus on history and evolution of Remote sensing. To explain the principle involved in remote sensing i.e. the Electromagnetic spectrum, reflection, refraction, diffusion, absorption and interaction with the earth's atmosphere. To give the technical knowledge of satellite system. To provide knowledge on the platforms and instruments used for remote sensing. To give light on Aerial Remote sensing and satellite Remote sensing. <p>To explain about the specifications of sensors</p>

9.	GEG-203P	Interpretation of topographical and Weather Maps	2020	<ul style="list-style-type: none"> • To provide understanding and interpretation Skills of different Topographical maps. • To improve the knowledge on Indian weather maps and Interpretations skills.
10	GEG-204P	Techniques of Mapping and Map Analysis	2020	<ul style="list-style-type: none"> • To apprise the students about the Terrain mapping techniques • To project the representation of the land forms by using contour lines • To explain the methods of slope analysis • To develop the knowledge on the thematic maps
11	GEG-205	Geographical Thought	2020	<ul style="list-style-type: none"> • To acquaint the students with the Geographical philosophy and the Methodology and historical development of geography as a professional field. • The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production. • To developing critical thinking and analytical approaches and Students will acquire an understanding of and appreciation for the contributions of the eminent geographers to the subject.
12	GEG-206	Human Values and Professional Ethics-II	2020	<p>Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	GEG-301	Urban Studies	2020	<ul style="list-style-type: none"> • To deal with the concept of urban settlements and evolution of urban population and to provide concept of Urban studies.

				<ul style="list-style-type: none"> • To explain the cause and effect of growth in urban population. • To explain the theories involved in classification of towns and relationship between towns and cities and their population. • To understand patterns of World urbanization with reference to India
14	GEG-302	Geographical Information System(G.I.S)	2020	<ul style="list-style-type: none"> • To understand the evolution of GIS. • To focus on collection, analyzing, interpretation and presenting the data related to Earth. • To explain the types of data collection with respect to time and terrain and Database management and retrieving the data from different sources. • To provide the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS. • To provide knowledge on GIS applications in different sectors.
15	GEG-303P	Geographical Information System(G.I.S)	2020	<ul style="list-style-type: none"> • To acquaint knowledge about especially Geographic Information System(GIS) softwares. • To develop the skill of geo-referencing and creation of different data files. • To improve the practical knowledge on attributed data and linkage. • To develop the skill on analysis methods of GIS.
16	GEG-304P	Statistical Techniques	2020	To analyze and represent the geographical data
17	GEG-305A	Agricultural Studies	2020	<ul style="list-style-type: none"> • To focus on evolution of Agriculture through at the different ages and approaches. • To understand the concepts and importance of determinants in different cropping patterns. <p>To understand agricultural allocation theories also the problem and prospect of Indian Agriculture</p>
18	GEG-305B	Regional Geography of	2020	<ul style="list-style-type: none"> • To develop the understanding about physical features of Indian Geography.

		India with special reference to Andhra Pradesh		<ul style="list-style-type: none"> To familiarize the students with physiography, Drainage, Climate, soil and natural vegetation of India.
19	GEG-305C	Disaster Management Studies	2020	<ul style="list-style-type: none"> To develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness. To create awareness on human and natural disasters To understand classification of disasters and its impacts
20	GEG-306A	Regional Geography of Andhra Pradesh	2020	<ul style="list-style-type: none"> To acquaint the students with re-organization of Andhra Pradesh and its new physical, climate and drainage aspects.. To obtain the knowledge of demographic, irrigation and major crops. To understand Andhra Pradesh mineral and industrial aspects with transportation. To improve knowledge on the transportation and communication aspects of Andhra Pradesh
21	GEG-306B	Geographical information System(GIS) and Global Positioning System(GPS) applications	2020	<ul style="list-style-type: none"> To develop the skill of understanding GPS and Survey. To create awareness on post processing of GPS data and collection of data from GPS survey. To develop skill of report writing by using GPS data and software and hardware To acquaint knowledge about especially Geographical Information System(GIS) soft wares. To develop the skill of geo-referencing and creation of different data files. To improve the practical knowledge on attributed data and linkage. To develop the skill on analysis methods of GIS.

22	GEG-401	Regional Planning	2020	<ul style="list-style-type: none"> • To apprise the concept of Region and its planning. • To explain the types of regions and regional hierarchy. • To explain the types of regional planning and planning process. • To the people participation in planning process and role of Panchayat Raj system • To explain the resource based and physiographic based regional planning.
23	GEG-402	Advanced Remote Sensing	2020	<ul style="list-style-type: none"> • To give broad knowledge on photogrammetry, Principle, process, platforms and techniques and Aerial photographs. • To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques. • To understand the application of remote Sensing and Photogrammetry in various fields of study.
24	GEG-403P	Research Techniques	2020	<ul style="list-style-type: none"> • To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis. • To calculate and apply measures of location and measures of dispersion--grouped and ungrouped data cases. <p>To sensitize the different Research and agricultural techniques</p>
25	GEG-404P	Remote Sensing Applications	2020	<ul style="list-style-type: none"> • To explain practical knowledge on Remote sensing applications... • To help to understand Visual and digital interpretation of satellite Images. • To illustrate interpretation of Aerial photos. <p>To acquaint knowledge on allocation of RS in different fields and sectors</p>
26	GEG-405A	Water and Soil Resource Management	2020	<ul style="list-style-type: none"> • To apprise the student to various water resources related aspects and hydrological cycle. • To focus on groundwater and soils specifications. <p>To develop skill of water and soil management and to study on some case studies</p>
27	GEG-405B	Environmental Studies	2020	<ul style="list-style-type: none"> • To create the environmental aptitude among students. • To familiarize the students with concepts, issues, approaches about physical

				<p>land</p> <ul style="list-style-type: none"> To acquainted with contemporary environmental problems and challenges. <p>To provide knowledge on Ecosystem, Biomes, food chain and hydrological cycle</p>
28	GEG-405C	Geography for Research Extension and industry	2020	<ul style="list-style-type: none"> To explain the historical evolution, of research in Geographical studies. To help to understand about ethics, methods and factors in geographical research. To provide the knowledge about forms of research and design. To illustrate research methods and data collection. <p>To acquaint research analysis and report writing</p>
29	GEG-406A	Regional Geography of India	2020	<ul style="list-style-type: none"> To conceptualize the regional approaches and to examine regional differentiation in the study of Indian Geography. To expose to historical, economic, cultural, social and physical characteristics of India. <p>To provide an introduction to the regions of the India in terms of both their uniqueness and similarities</p>
30	GEG-406B	Remote sensing Principles and Applications	2020	<ul style="list-style-type: none"> To explain practical knowledge on Remote sensing applications... To help to understand Visual and digital interpretation of satellite Images. To illustrate interpretation of Aerial photos.

36. Geology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	GEO-101	Geomorphology and Paleontology	2020	<ol style="list-style-type: none"> 1) Able to explain conceptual approaches in geomorphology. 2) Able to describe land forms and land forming processes in different climate zones and tectonic regimes. 3) Able to explain different theories and models for landscape evolution. 4) Obtain knowledge in recognizing and minimizing the mass wasting.

				<p>5) Able to apply geomorphological concepts in economically important projects.</p> <p>6) <i>Palaeontology</i> is the study of prehistoric species, mostly ones that are extinct. It focuses primarily on fossil data, using a variety of physical, chemical and biological.</p> <p>7) Paleontology has essentially three basic goals: (1) to describe the world's past biodiversity; (2) to outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.</p>
2	GEO-102	Crystallography & Mineralogy	2020	<p>1) Students will be able to describe crystal structures, crystal symmetry and twinning</p> <p>2) Students will learn the use of X-ray crystallography to determine the arrangement Atoms in a crystal.</p> <p>3) Students will be able to identify the mineralogical composition of geological materials by studying some of the optical properties and techniques in order to reveal their origin and evolution.</p> <p>4) Students will get thorough knowledge about the physical chemical and optical Characteristics of minerals could lead to the discovery of new uses for Earth's mineral resources.</p>
3	GEO-103P	Crystallography & Mineralogy	2020	<p>1. The student understands the importance of minerals to society and to the study of the Earth.</p> <p>2. Can explain how the properties of chemical elements and their bonds regulate the structure and composition of minerals.</p> <p>3. Demonstrate how the crystal structure of minerals affects the external morphology and physical properties of a mineral (e.g. crystal symmetry, crystal habit).</p> <p>4. Identify various minerals using Physical properties.</p> <p>5. Identify various crystal forms shown by minerals belonging to different crystal system.</p>
4	GEO-104P	Geomorphology & Paleontology	2020	<p>1) The practical application of geomorphological science now forms river restoration and environmental protection.</p> <p>2) the extensive experience gained through field work, analysis and input to</p>

				<p>the design process to provide thorough understanding of geomorphology in the river environment and describe</p> <p>3) Paleontology is highly relevant to the modern and future world. We can learn how climate change has effected past organisms as well as how organisms have changed the physical world. We can also better understand the principles of extinction, evolutionary change, and biodiversity.</p> <p>4) Paleontological resources, or fossils, are any evidence of past life preserved in geologic context. They are a tangible connection to life, landscapes, and climates of the past. They show us how life, landscapes, and climate have changed over time and how living things responded to those changes.</p> <p>5) Paleontology lies between biology and geology since it focuses on the record of past life, but its main source of evidence is fossils in rocks.</p> <p>6) paleontology, also spelled paleontology, scientific study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.</p> <p>7) Body fossils and trace fossils are the principal types of evidence about ancient life, and geochemical evidence has helped to decipher the evolution of life.</p>
5	GEO-105	Stratigraphy & Paleontology	2020	<p>1) Students would have acquired comprehensive knowledge on principles of Stratigraphy, correlation methods classification of Stratigraphy units, tectonic framework of India and Geological timescale.</p> <p>2) Ability to give an account of various stratigraphic units and give stratigraphic column distribution in India, fossil content and economic importance of given geological formation.</p> <p>3) Apply standard stratigraphic codes while preparing geological reports</p> <p>4) Describe morphology, classification, evolutionary trends of Invertebrate fossils with geological and geographic distribution and paleoecological and paleo-environmental relevance.</p> <p>5) Ability to identify, classify and describe the morphology of the</p>

				<p>invertebrate fossils and plant fossils.</p> <p>6) Application of fossils in establishing the age of the rockunit, correlation with other area, and Use of fossil in finding mineral deposits.</p> <p>7) Ability to apply micropalaeotological techniques in hydrocarbon exploration.</p>
6.	GEO-106	Human Values & Professional Ethics-I	2020	<p>1) After completion of this course the students will be able to know the importance of Ethics and Human Values in various professions.</p> <p>2) Students also will get in depth knowledge and understanding of moral values and ethical code of the Indian Society. Especially embedded in various scriptures.</p>
7.	GEO-201	Structural Geology and Geotectonics	2020	<p>1) Able to demonstrate a basic understanding of stress, strain, rheology of earth's lithosphere and comprehend how to describe and classify brittle and ductile structures.</p> <p>2) Able to describe, identify and analyze the folds, faults and joints and their effects on outcrop pattern.</p> <p>3) Measure, plot and interpret structural field data and can relate these to geological Maps and knows how to read geological maps and geological cross-section.</p> <p>4) Obtain knowledge of shear zone characteristics and textures which are usually highly, Mineralized zones.</p>
8.	GEO-202	Remote Sensing and GIS	2020	<p>1) Develop knowledge in basics of Remote Sensing interpretation keys and applications.</p> <p>2) Formulate the relationship between EMR and satellite Remote Sensing.</p> <p>3) Application for Remote Sensing for important economic deposits.</p> <p>4) Operate GIS data model and demonstrate GIS techniques for various applications.</p> <p>5) Apply RS and GIS techniques to analyze the various geological materials.</p>
9.	GEO-	Structural	2020	<p>1) The interpretation of geological maps and determination of strike and dip,</p>

	203P	Geology & Sedimentology		<p>Borehole problems and apparent dip, plunge and pitch of linear structures</p> <p>2) Structural geology concepts and tools to understand rocks deformation in hot environments</p> <p>3) Structural geology with interpretations and simple geomechanical problems and solutions</p> <p>4) Structural geology issues related to new instruments in measuring structural data from rocks, paleomagnetic studies in tectonics field studies in structural geology interdisciplinary aspects of structural geology.</p> <p>5) Sedimentology encompasses the study of modern sediments such as sand, silt, and clay, and the processes that result in their formation (erosion and weathering), transport, deposition and diagenesis.</p> <p>6) Sedimentology, the study of sedimentary rocks and the processes by which they are formed, includes and is related to a large number of phenomena.</p> <p>7) Sedimentology includes the five fundamental processes defined by the term sedimentation --weathering, erosion, transportation, deposition and diagenesis.</p>
10.	GEO-204P	Remote Sensing and GIS	2020	<p>1. Understand the concepts of Photogrametry and compute the heights of objects</p> <p>2. Understand the principles of aerial and satellite remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies.</p> <p>3. Understand the basic concept of GIS and its applications, know different types of data representation in GIS.</p> <p>4. Understand and Develop models for GIS spatial Analysis and will be able to know what the questions that GIS can answer are.</p> <p>5. Apply knowledge of GIS software and able to work with GIS software in various application fields.</p> <p>6. Illustrate spatial and non spatial data features in GIS and understand the map projections and coordinates systems.</p> <p>7. Apply knowledge of GIS and understand the integration of Remote Sensing and GIS.</p>

11	GEO-205	Sedimentology	2020	<p>1) Able to identify different sedimentary rocks in both hand specimens and thin section and derive information on the depositional conditions and environments.</p> <p>2) Able to study the sequence of sedimentary rock strata and describe the tectonic framework of sedimentation to understand the earth's history including palaeoclimatology and history of life</p>
12	GEO-206	Human Values & Professional Ethics-II	2020	<p>1) After completion of this course the students will be able to follow and practice good behaviour with human values and moral support to their elderly family members.</p> <p>2) They also aware and get knowledge about medical ethics how the doctors will behave with patients, what type of ethics should be followed by business people. They also get in through knowledge about the protection of environment social ethics like family ethics, the role of print and electronic media in prevention and protection of Human rights in Indian society.</p>
13	GEO-301	Igneous Petrology	2020	<p>1) Acquire knowledge on the evolution of magma by different processes takes place from origin to emplacement with respect to different tectonic settings.</p> <p>2) Explain Igneous processes, formation, structures, classification and significance of texture in explaining rock history.</p> <p>3) Obtain knowledge on the crystallizing phase equilibrium of multi component magma system.</p> <p>4) Identify different Igneous rocks both in handspecimens and thin sections in terms of their petrogenesis by studying the petrographic characteristics.</p>
14	GEO-302	Metamorphic Petrology	2020	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p>
15	GEO-303P	Petrology	2020	<p>1) Describe the types and relative abundances of phases in a rock based on observations from hand specimens and thin sections</p>

				<p>2) Interpret the geologic history of igneous rocks based on mineral assemblage and textures using both hand sample and microscope techniques</p> <p>3) Use metamorphic mineral assemblages and textures to constrain deformation history and P-T conditions</p> <p>4) Use geochemical data (partition coefficients, REE plots, etc) to constrain petrogenetic processes</p> <p>5) Integrate their research findings with those of peers in developing a consensus model that (a) explains mineral occurrences and interplay (micro- and macroscopic) in field samples, and (b) holds up to public scrutiny (as a consensus model and as individual components) at a departmental mini-poster symposium</p> <p>6) Design and implement a field sampling campaign</p> <p>7) Use a portable X-Ray Fluorescence Spectrometer to collect elemental analyses</p> <p>8) Use MS Excel to organize, plot, and evaluate the petrogenesis of CRB using elemental data</p>
16	GEO-304P	Geochemistry	2020	<p>1) Geochemistry can play a key role in helping to protect the safety of drinking water by identifying the sources, concentration and forms of potentially harmful elements such as arsenic mercury and fluoride in natural water.</p> <p>2) Geochemistry and health establishes and explains links between the natural or disturbed chemical composition of the earth's surface and the health of plants animals and people.</p>
17	GEO-305	Geochemistry and Thermodynamics	2020	<ol style="list-style-type: none"> 1. 1) Understand the behavior of elements in a geochemical context and relate this knowledge to how elements redistribute within the Earth. 2. 2) Learn to interpret and explain interactions between Earth reservoirs. 3. 3) Understand and interpret the major processes that form and modify the

				4. Earth's crust and mantle. 4) Use isotopes to trace geological processes and age date specific events.
18	GEO-306	Computer Applications and Geostatistics	2020	1) Comprehend the database related to field geological data 2) Prepare and Interpret graphical and pictorial data 3) Exposure to some selected software's related to geology
19	GEO-307	Dimensional Stones and Building Materials	2020	1) Explain the distribution of dimensional stones and occurrence of construction materials 2) Classify dimensional stones and construction materials 3) Assess the suitability of various dimensional stones and construction materials
20	GEO-308	Gemology	2020	1) The course is focused on a comprehensive learning in gemology 2) Understands the formation, classification and properties to final the grading and evaluation. 3) Knowledge in order to identify original gemstones and stimulants 4) Acquire skills which will be useful to them in gem industry
21	GEO-309	Surveying and Field Geology	2020	1) Understand the use of different surveying instruments, field equipment, aerial photographs and their use. 2) Compute the area and earthwork for different works by using surveying instruments 3) Analyze surveying techniques, tools, survey data and geological reports 4) Prepare contour maps, geological maps and reports 5) Solve survey issues using proper survey and interpretation. 6) Use appropriate modern tools in surveying and mapping
22	GEO-401	Economic Geology	2020	1) Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well. 2) <i>Economic geology</i> is concerned with earth materials that can be used for economic and/or industrial purposes. These materials include precious and base...

				<p>3) Scientific <u>discipline</u> concerned with the distribution of mineral deposits, the economic considerations involved in their recovery, and an <u>assessment</u> of the reserves available.</p> <p>4) Economic geology deals with metal ores, fossil fuels (<i>e.g.</i>, <u>petroleum</u>, <u>natural gas</u>, and coal), and other materials of commercial value, such as salt, gypsum, and building stone. It applies the principles and methods of various other fields of the geologic sciences, most notably <u>geophysics</u>, <u>structural geology</u>, and <u>Stratigraphy</u> . Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p>
23	GEO-402	Mineral Exploration, Mining Engineering & Geology	2020 7	<p>1) This course linked to industry and acquires knowledge on techniques to locate ore bodies, methods for mineral exploration and geologic aspects of drilling.</p> <p>2) Acquire knowledge on geophysical methods for Ore reserve estimation.</p> <p>3) Acquire knowledge on Ore beneficiation processes and techniques.</p> <p>4) Confirm mining rules and regulations</p> <p>5) Able to determine the suitable mining methods</p> <p>6) Analyse different ores and ore beneficiation processes.</p> <p>7) Understand the different engineering properties of rock types and role of geologists in selecting the sites for different major engineering projects.</p>
24	GEO-403P	Economic Geology	2020	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p> <p>4) Acquire practical knowledge on microchemical techniques for identification ores and estimation of ore reserves.</p>
25	GEO-	Project Work	2020	<p>1) The project is an effort using topographical maps suggest the view of</p>

	404P			<p>Kurnool and Mahaboobnagar district.</p> <p>2) Elevation is gradually increasing from South to North in study area, the lowest topography 300m observed in southern portion of study area and highest elevation of 430m is noted in the northern portion of study area.</p> <p>3) Land features covering mostly by forest area yellow colour representation of topo map suggest crop lands.</p> <p>4) The river patterns and drainage pattern are studied by using trace thematic method suggests that its are mostly covering hard rock terrain.</p> <p>5) The rivers and lakes are mostly dried and lakes are scattered throughout the district.</p>
26	GEO-405	Hydrogeology	2020	<p>1) Apply the knowledge of geological formations and the hydrological properties of rocks</p> <p>2) Analyze the suitability of water for domestic, irrigation and industrial purposes Conduct geological and geophysical investigations and give recommendations for drilling of borewells.</p> <p>3) Explain causes of pollution of groundwater give remedial measures to the society.</p> <p>4) Use modern methods and appropriate techniques to carrying out geophysical studies and artificial recharge methods</p> <p>5) Students will get critical knowledge on evaluation of geological condition at the major engineering project sites.</p>
27	GEO-406	Environmental Geology & Natural Hazards	2020	<p>1) Explain different aspects of environment and local, regional and global environmental problems.</p> <p>2) Classify and explain the environmental pollution and disaster control technologies</p> <p>3) Prepare, interpret and implement environment projects</p> <p>4) Identify the natural and environmental disasters, its causes and apply preventive measures.</p> <p>5) Adopt the laws and regulations towards hazard management</p> <p>6) Able to prepare controls of mitigating toward natural disasters.</p>
28	GEO-407	Water Shed Management	2020	<p>1) Explain the importance of watershed management</p> <p>2) Classify and explain the different water harvesting techniques</p> <p>3) Use modern tools for land erosion control</p>

				4) Develop or improve the people's participatory approach for sustainable development and management of watersheds.
29	GEO-408	Medical Geology	2020	1) Explain about relationship of human Health and Geological Processes. 2) Able to understand the importance of the Water quality standards and impact of micronutrient deficiencies in soils and crops on human health 3) Analyse the interaction of abundance of elements and geological effects.
30	GEO-409	Fuel Geology	2020	1) The course offers a detailed study about natural fuels like coal and petroleum their formation and distribution especially in sedimentary basins. 2) Students shall benefit to have basic ideas about formations, nomenclature in constitution of coal working detail of distribution of coals and coal industry in India, Sufficient idea of formation and entrapment of oil and gas. 3)Get elaborate knowledge about occurrence of atomic minerals in nature, methods of prospecting, atomic fuels and environment.

37. Home Science

Food Science Nutrition & Dietetics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	FSND 101	Food Chemistry and Analysis	2020	I. Acquire knowledge on chemical composition physical, chemical, and functional properties of Water, carbohydrate, Protein and Fats. II. Understand the principles and working applications of different analytical techniques associated with food. III. Perform skills in qualitative and quantitative estimation of nutrients in different foods. IV. This course gives an hands on experience which will help student to become food analyst at local, regional, national and global levels.

2	FSND 102	Food Science and Experimental	2020	<ul style="list-style-type: none"> I. Acquire knowledge on Plant and Animal foods composition, and processing techniques on nutritive quality of foods. II. Understand the principles of cookery of different foods and methods of evaluation. III. This course is prerequisite for skill development in Food Product development. IV. Standardization and experimentation on different foods leading to physical, chemical and sensory changes can be understood leading to become food research analyst in industries at local, regional, national levels.
3	FSND 103	Clinical Nutrition and Dietetics-I Foods	2020	<ul style="list-style-type: none"> I. Understand the concepts of nutrition and its relation to health. II. Describe the role and responsibilities of Dietitian in Hospital. III. Apply Knowledge related to Therapeutic modification of diets and Plan and prepare diet for different diseases conditions. IV. This will help the students to get placements in hospitals and also start their own diet and nutrition clinics.
5	FSND 107	Essential of Food and Community Nutrition	2020	<ul style="list-style-type: none"> I. Understand about nutrients in food, their functions and consequences of deficiency. II. Apply skills for planning diets for nutritional disorders like PEM, Iron, Vitamin A and Iodine. III. Develop the knowledge of techniques to assess the nutritional status of different age groups. IV. Acquire knowledge on government programs to prevent nutritional disorders according to regional and national needs.
6	FSND 104	Food Chemistry and Analysis Practical	2020	<ul style="list-style-type: none"> I. Develop skills in quantitative and qualitative analysis of food.
7	FSND 105	Food Science and Experimental Foods Practical	2020	<ul style="list-style-type: none"> I. Apply skills in standardization of foods using different processing techniques. II. Acquire skills in processing, preparation and evaluation of bakery products.
8	FSND 106	Clinical Nutrition and Dietetics-I Practical	2020	<ul style="list-style-type: none"> I. Acquire hands on experience in Therapeutic modifications of diet for different diseases by planning, preparing and evaluating. II. Acquire community assessment skills in terms of anthropometry, dietary, clinical and biochemical for various disorders and planning programs for important days.

				III. Apply Computational skills in the Nutritional allowances during life span.
9	FSND 107	Human Values and Professional Ethics-I	2020	<ul style="list-style-type: none"> I. Define the term ‘ethics’ , ‘good and bad values’, crime and punishment and religioustolerance. II. Understand the importance of good character, conduct and values embedded in various religions. III. Apply knowledge ofprofessional ethics and correlate the concepts in addressing the ethical issues outside the class room . IV. Demonstrate knowledge of ethical values in non-class room activities, internships and field work and resolve the moral issues. .
10	FSND 201	Nutritional Bio chemistry	2020	<ul style="list-style-type: none"> I. Understand the metabolism of nutrients such as carbohydrates, proteins, lipids, minerals and vitamins in human physiology. II. Acquire knowledge on factors affecting digestion, absorption of nutrients. III. Create awareness on enzymes and its role in nutrient metabolism. IV. Gain knowledge on role of vitamins and minerals as coenzymes in metabolism.
11	FSND 202	Food Microbiology and Safety	2020	<ul style="list-style-type: none"> I. Acquire knowledge about important genera of microorganisms associated with food. II. Acquaint with food contaminants and their sources. III. Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. IV. Gain knowledge on the characteristics of food borne diseases, infections and intoxications and their identification.
12	FSND 203	Clinical Nutrition and Dietetics-II	2020	<ul style="list-style-type: none"> I. Understand the concepts of dietary principles for various diseases. II. Comprehend knowledge in Dietary modifications for the management of diseases. III. Application of principals in preparation and service of diets to the patients. IV. Able to assess thecase studies and construct the diet charts.
13	FSND 204	Nutritional Bio chemistry Practical	2020	<ul style="list-style-type: none"> I. Develop skill and hands on experience in analysis of biochemical parameters in blood and serum.
14	FSND 205	Food Microbiology and Safety Practical	2020	<ul style="list-style-type: none"> I. Demonstrate and develop skills in the use of standard methods and procedures for the microbiological analysis of food
15	FSND	Clinical	2020	<ul style="list-style-type: none"> I. Application of principals in preparation and service of diets to the patients.

	206	Nutrition and Dietetics-II Practical		II. Able to assess the case studies and construct the diet charts.
16	FSND 207	Research Methodology	2020	<ul style="list-style-type: none"> I. Understand the concept of doing research about terms like ‘variables’, ‘hypotheses, and ‘research II. Gain knowledge on different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. III. Critically gain knowledge to select a sample by using different sampling methods like probability and non-probability sampling. IV. Develop a research proposal in the appropriate scientific style. V. Critically apply knowledge of application of statistics in data analysis. VI. Apply skills in using computer applications for data analysis
17	FSND 208	Human Values and Professional Ethics-II	2020	
18	FSND 301	Food Processing and Preservation Technology	2020	<ul style="list-style-type: none"> I. Understand the principles and scope of food processing and preservation. II. Get an overview on various techniques/methods in food processing and preservation. III. Acquire knowledge of emerging technologies and their applications in food processing and preservation. IV. Acquaint knowledge on advanced food preservation technologies.
19	FSND 302	Advances in Human Nutrition	2020	<ul style="list-style-type: none"> I. Appraise the advance concepts of nutrition of Brain, Immunity and Sports. II. Understand the concepts of dietary management in endemic nutrition problems. III. Create knowledge on the dietary management during emergencies. IV. Understand the process and relation of immunity and nutrition
20	FSND 303	Rural work experience	2020	This programme develops competency in the areas of technological, managerial and communication skills among the students. To develop communications skills in students using extension training methods through planning, preparing of Teaching Learning materials and providing education in the areas of Nutrition, Child development and

				transfer of technology.
21	FSND 304	Internship	2020	INTERNSHIP as dietitian in hospitals give practitioner skills for entry-level dietitians who are able to assume leadership roles to improve and maintain the nutritional care of diverse individuals, families and communities within national and global populations.
22	FSND 305-A	Nutrition Research techniques	2020	<ol style="list-style-type: none"> I. Understand the methods of nutritional status assessment. II. Knowledge on assessment techniques of protein quality in diets III. Comprehensive knowledge on research techniques using animal models. IV. Gain knowledge in nutrition research techniques using Human models.
23	FSND 305-B	Geriatric Nutrition	2020	<ol style="list-style-type: none"> I. Understand the physiological changes and theories of ageing. II. Knowledge on importance and consequences of diet in elderly. III. Awareness on degenerative diseases, life style genesis and its management through diet. IV. Describe the government programs and policies for elderly.
24	FSND 305-C	Nutrition in Emergencies And Disaster Management	2020	<ol style="list-style-type: none"> I. Understand and assess the emergency situations related to food and Nutrition in natural and manmade disasters. II. Acquire knowledge on nutrition surveillance and treatment in emergencies. III. Gain Knowledge on planning nutrition relief and rehabilitation in emergencies. IV. Develop skills in Nutritional epidemiological studies.
25	FSND 306-A	Fundamentals of Food, Nutrition and Health	2020	<ol style="list-style-type: none"> I. Gain knowledge on foods, food groups, balanced diet for different age groups. II. Understand the importance of macro and micronutrients in daily diet. III. Comprehend knowledge on deficiency symptoms of different nutrients. IV. Develop skills and hands on experience to assess nutritional problems in community.
26	FSND 306-B	Nutritional Assessment	2020	<ol style="list-style-type: none"> I. Learn the determinants of Nutritional Surveillance. II. Understand the direct and indirect methods of nutritional assessment. III. Knowledge on dietary assessment at individual and house hold level. IV. Identify the clinical symptoms and biochemical tests for different nutritional problems.
27	FSND 401	Food Safety Standards and	2020	<ol style="list-style-type: none"> I. Understand the current food safety standards rules and regulations. II. Gain knowledge on desirable and undesirable constituents and contaminants in

		Quality Control		<p>foods.</p> <p>III. Critical analysis on subjective and objective methods of quality of food.</p> <p>IV. Develop skills for quality analysis and assurance of food.</p>
28	FSND 402	Food Product Development and Marketing	2020	<p>I. Illustrate the new product categories in food market and their characteristics.</p> <p>II. Elucidate the process of new food product development in food industry.</p> <p>III. Exemplify various specialty food products and their applications.</p> <p>IV. Acquire the skill to design and development of new food product and analyze the quality of the product.</p>
29	FSND 403	Nutrition for Health and Fitness	2020	<p>I. Define the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation.</p> <p>II. Understand the Energy metabolism pathways during physical activity.</p> <p>III. Describe the role of macronutrients in physical performance, weight management and obesity.</p> <p>IV. Explains the nutritional needs in different sports and the role of national agencies.</p>
30	FSND 404	Food Safety Standards and Product Development Practical's	2020	<p>I. Develop skills for quality analysis and assurance of food.</p> <p>II. Acquire the skill to design and development of new food product and analyze the quality of the product.</p>
31	FSND 405 A	Institutional Food Service Management	2020	<p>I. Understand the different types and management of food services.</p> <p>II. Illustrate the infra structure plans, menus and equipment in food service establishments.</p> <p>III. Know the food safety measures in food service establishments.</p> <p>IV. Knowledge on finance and personnel management.</p>
32	FSND 405 C	Technology of Packaging(T+P)	2020	<p>I. Provide knowledge on packaging and packaging materials</p> <p>II. An overview of the scientific and technical aspects of food packaging.</p> <p>III. Enable the students to understand the regulations of packaging and packaging material testing.</p> <p>IV. Apply skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life.</p>
33	FSND 406-A	Child Growth and Development	2020	<p>I. Know the terms growth, development and stages of development across life span</p> <p>II. Understand the characteristics of children at different stages of childhood</p> <p>III. Explain the different developments like physical, cognitive , language and social</p>

				development during childhood. IV. Apply knowledge to understand normal development and developmental delays during childhood.
34	FSND 406-B	Disaster Management	2020	I. Know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management. II. To understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters III. Explain the efforts made by the NGOs, Community based organizations and local administration in disaster management. IV. Discriminate disaster responses of Armed forces and Police.

Human Development and Child Welfare

Extension Management and Communication Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	EMCT-101	Extension Education in Community Development	2020	The students can gain understanding on the Extension Management community development and panchayat raj system to study the community by using PRA and various approaches of extension education. The students will get jobs as extension officers, and various placements in community development projects, as well as rural co-operative sector.

2	EMCT-102	Community Nutrition	2020	The students know about nutrients in food and know about the nutritional deficiencies and the community level problems and policies and programmes of Nutrition.
3	EMCT-103	Communication and Media Preparation	2020	The concept of Communication –Recent trends in Instructional technology: Extension literature and the role of different factors influencing and effecting communication process- Dyad setting small group and mass communication. This course will help the students to improve their communication skills.
4	EMCT-104	Extension Education in Community Development Practical	2020	The students will acquire skill to study the community by using PRA techniques and develop the skill of critical analysis on various approaches of extension education.
5	EMCT-105	Community Nutrition Practical	2020	Students gain practical knowledge on the role of nutrients in different stages of human life and methods of nutritional assessment and community level problems and policies.
6.	EMCT-106	Communication and Media Preparation Practical	2020	Students analyze the role of different factors influencing and effecting communication process, preparation and use of different teaching aids in teaching different groups of people and in different learning situations.
7.	EMCT-	Dynamics of	2020	The students will gain knowledge on social structure; characteristics of rural people; rural

	107	Rural Society		social problems - social institutions, learn the factors affecting social change and gain insight about the welfare policies and programmes for rural society.
8.	EMCT-108	Human Values and Professional Ethics-1	2020	. Students will apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.
9.	EMCT-201	Entrepreneurial Development and Empowerment of Women	2020	Students acquire knowledge on Entrepreneurship, about the strategies for empowering women; rights of women and develop the entrepreneurship skills and learn about the institutional support of entrepreneurship. This course will help the students to become good entrepreneurs and also to start their own business enterprise.
10.	EMCT-202	Educational Technology	2020	The students gain knowledge on concept of teaching learning process; forms and levels of teaching and learning; curriculum design, development knowledge on genesis and trends in modern education. This will help the students to develop the curriculum and to choose their career in the teaching field.
11	EMCT-203	Community organization and Leadership	2020	Students will know about community organization, process of Community organization, rural institutions, leadership, analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth clubs; Role of Panchayat in developing rural women.
12	EMCT-204	Entrepreneurial Development	2020	Students will realize the role of entrepreneurship in economic development. Develop the

		and Empowerment of Women Practical		skill of writing the business proposal and starting of business enterprise.
13	EMCT-205	Educational Technology Practical	2020	Students will develop the skill on developing a course curriculum; Preparation of lesson plans of selected topics and use of different instructional materials.
14	EMCT-206	Community Organization and Leadership Practical	2020	Students will develop the skill on different patterns of leadership, techniques of identification of leaders, and appraise the ongoing programmes in the locality.
15	EMCT-207	Research Methodology	2020	Students get knowledge on 'variables', 'hypothesis', research 'and recognize the purpose of doing a research, sampling methods and develop a research proposal in the appropriate scientific style.
16	EMCT-208	Human values and Professional Ethics-II	2020	Students gain knowledge on 'value education' 'self-introspection' and 'self-esteem develop well balanced personality, socially responsible persons of the society.
17	EMCT-301	Rural Development Administration	2020	Students gain insight about administration in Extension and rural development: coordination and supervision in rural development administration, the purpose and principles of administration; human relation in extension administration the recent ongoing rural development programmes etc. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN,

				CARE, SEWA etc
18	EMCT-302	Training and Development	2020	Students will learn the concept of training, goals of training; learning and types of learning, factors affecting learning among adult, current trends in training methodologies; training strategies and designs and acquire skills in developing; selection and use of different training methods- case study; role play; and brain storming; etc. This course will help the students to get jobs as Trainee- motivators, Trainers, consultants etc.
19	EMCT-303	Rural Work Experience	2020	Students will develop an understanding of rural life situations prevailing in villages with special reference to Home science among the student will know about socioeconomic conditions of people and their problems and several agencies and institutions involved in rural development.
20	EMCT-304	Internship	2020	Students will gain first-hand exposure of working with NGOs. This will provide a practice-oriented and 'Hands-on' working experience in the NGOs / Government organizations and to enhance the students learning experience.
21	EMCT-305	(a) Managerial Skills for Extension Professionals (b) Communication Technologies in Extension (c) Sustainable Livelihood Systems	2020	a) Students will know about the conceptualization of management process and its major functions, managerial skill; nature and importance for extension professionals. To understand the concept; scope and relevance of media in society; functions and future prospects of media systems b) To understand the concept; scope and Communication technologies, relevance of media in society; functions and future prospects of media systems etc c) Students will know about the livelihoods of rural/urban people; resources – land, soil; climate; water and forests; processes and relationships among agro-climatic and natural resources, understand the production systems- farming and non-farming activities; their linkage with the livelihoods of rural people, food security; livelihood

				security, indicators of environmental sustainability.
22	EMCT-306	(a) Fundamentals of Food. Nutrition and Health (or) (b) Nutritional Assessment	2020	a) Students gain knowledge on foods, food groups, balanced diet for different age groups, understand the importance of macro and micronutrients in daily diet. b) Students will learn the determinants of nutritional surveillance; understand the direct and indirect methods of nutritional assessment. Gain knowledge on dietary assessment at individual and house hold level. Identify the clinical symptoms and biochemical tests for different nutritional problems.
23	EMCT-401	Principles of Guidance and Counseling	2020	Develop knowledge about the concept; purpose; functions and role of guidance; types of services in a guidance programme , counseling and counseling theories, group guidance and counseling; concept; characteristics; Individual v/s group techniques. This course will help the students to get jobs as counselors and in Government and Non-government organizations, as counselors, consultant research co-coordinators etc
24	EMCT-402	Extension Programme Planning and Evaluation	2020	Students will get knowledge about Programme planning in Extension; Programme Implementation; Programme Evaluation, Documentation, Programme Planning; the Preparation of plan of work ; Purpose, types and tools of Evaluation; Programme planning and implementation, documentation in Programme implementation. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
25	EMCT-403	Thesis/ Community Health Management	2020	Students gain knowledge about the concept of community health and global health; Primary Health Care – definitions; principles; components; comprehensive health care; levels of prevention, major health problems in India, management information systems in health, health needs of special groups – women, infants; and children; health of

				adolescents; geriatric health needs and problems.
26	EMCT-404	Principles of Guidance and Programme Planning Practical	2020	Assess the guidance programmes and counseling process in school and out of school settings and analyze use of standard test of study habits and attitudes (SSHA) for analyzing the study habits and attitudes.
27	EMCT-405	(a) Extension Management (b) Science & Technology for Rural Women (c) Environmental Management	2020	a) Students will know about administration and management; process of management and organizational climate, understand the qualities and functions of extension personnel; Problems and issues of extension management in India. b) Analyze the management skills of extension personnel. Students will learn about the Science and Technology for rural development; Energy saving devices-application of solar energy; bio-gas etc., application of Science and Technology in Home science, safe water supply methods suitable for rural areas; health- hygiene and environmental sanitation, agencies involved in research and application of Science and Technology. c) Students will get the knowledge about the life and the environment; physical - chemical factors in the environment; changes in the environment; eco-system-earth, methods of waste management; women and environment government and non-governmental agencies in promoting better health, factors affecting changes in ecosystem and environment
28	EMCT-406	(a) Child Welfare	2020	a) Students will learn concepts of 'child' and 'child welfare', enlist children in need of care and difficult circumstances, understand the role of government, child welfare programmes developmental and rehabilitative manner to the disadvantaged people in the

	Programmes or (b) Disaster Management	society, monitoring and evaluation b) Students will get an insight about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management., global warming etc)efforts made by the NGOs, & Community based organizations and local administration in disaster management.
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Food Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	FT-101	Food Chemistry and Analysis	2017	<ul style="list-style-type: none"> - Students will acquire knowledge about physical, chemical, and functional properties of foods. - Learn the fundamental principles and working applications of different analytical techniques associated with food. - Students will be able to explore and perform skills in qualitative and quantitative estimation of nutrients in different foods.
2	FT-102	Food Science and Experimental Foods	2017	<ul style="list-style-type: none"> - Students will acquire knowledge on structure, composition and functional properties of plant and Animal foods. - Understand the principles of cookery of different foods and methods of evaluation. - Students will be able to apply the scientific method and quantitative

				techniques in standardisation of foods using different processing techniques.
3	FT-103	Cereal Grains, Legumes and Oilseed Technology	2017	<ul style="list-style-type: none"> - Students will gain knowledge on the structure and composition of cereal grains, pulses and oil seeds. - Understanding of the basic concepts of Post harvest technology, mechanism of equipments and processing of cereals, pulses and oilseeds - Know about various processing, milling process and evaluate Traditional and commercially processed foods with cereals, pulses and oilseeds
4	FT-104	Food Chemistry and Analysis	2017	<ul style="list-style-type: none"> - The students will know about principles and working applications of different analytical techniques associated with food. - Perform skills in qualitative and quantitative estimation of nutrients in different foods.
5	FT-105	Food Science and Experimental Foods	2017	<ul style="list-style-type: none"> - Comprehensive knowledge on techniques of analysing, evaluating and application of foods in different processing techniques in foods.
6.	FT-106	Cereal Grains, Legumes and Oilseed Technology	2017	<ul style="list-style-type: none"> - The students will be able to explore knowledge on various processing techniques of cereals, legumes and oilseeds. - Students acquire knowledge in various food applications and product preparations.
7.	FT-107	Essentials of Food and Community Nutrition	2017	<ul style="list-style-type: none"> - Students gain knowledge about nutrients in food and their functions.

				<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups
8.	FT-108	Human Values and Professional Ethics - I	2019	<ul style="list-style-type: none"> - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. - Introducing different concepts of Bhagavad Gita and its applications in uplifting of values in the present society.
9.	FT-201	Technology of Horticulture produce	2017	<ul style="list-style-type: none"> - Attain an overview on the classification composition and post-harvest handling technologies of fruits and vegetables to reduce postharvest losses and their value addition. - Impart the knowledge of processing, preservation and manufacture of fruits and vegetable based food products of fruits and vegetables. - Expertise in development of various Fruits & vegetables based products and assess the quality of fruit and vegetables and their products.
10.	FT-202	Food Microbiology and Safety	2017	<ul style="list-style-type: none"> - Obtain knowledge about important genera of microorganisms associated with food

				<p>and food spoilages.</p> <ul style="list-style-type: none"> - Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. - Demonstrate the use of standard methods and procedures for the microbiological analysis of food
11	FT-203	Dairy Technology	2017	<ul style="list-style-type: none"> - Impart the knowledge of milk grading , composition and technologies of processing of milk and milk products. - Provide in-depth knowledge in various unit operations and developments in dairy processing. - Demonstrate the manufacturing of various dairy products and exemplify the quality of dairy products.
12	FT-204	Technology of Horticulture produce	2017	<ul style="list-style-type: none"> - Student will know about various fruit and vegetable processing techniques and attain practical knowledge in production and preparation of products
13	FT-205	Food Microbiology and Safety	2017	<ul style="list-style-type: none"> - Acquire knowledge on laboratory techniques to identify microorganisms in food. - Demonstrate the various microbial estimations in foods by applying standard techniques.
14	FT-206	Dairy Technology	2017	<ul style="list-style-type: none"> - Students acquire knowledge of grading, composition, quality evaluation and processing techniques of milk and milk products.
15	FT-207	Research Methodology	2017	<ul style="list-style-type: none"> - Awareness about terms like ‘variables’, ‘hypothesis’, research ‘and recognize the

				<p>purpose of doing research.</p> <ul style="list-style-type: none"> - Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. - Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling and development of research proposal.
16	FT-208	Human Values and Professional Ethics – II	2017	<ul style="list-style-type: none"> - Student will know the values of ethics in various fields including medical, social and business ethics. - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	FT-301	Food processing and Preservation Technology	2017	<ul style="list-style-type: none"> - Students able to understand the scope, principles and different methods of processing and preservation techniques. - Acquire knowledge of emerging technologies and their applications in food processing and preservation. - Understand the applications and limitations of food processing and preservation technology.
18	FT-302	Live Stock and Sea Food technology	2017	<ul style="list-style-type: none"> - Acquire knowledge of the structure, composition, nutritional quality of various, livestock and seafood. - Gain insight knowledge of slaughtering,

				<p>carcass processing, processing methods used for processing meat poultry and fish.</p> <ul style="list-style-type: none"> - Prepare various value-added products of egg, meat, poultry and sea foods.
19	FT-303	Food Processing and Preservation Technology	2017	<ul style="list-style-type: none"> - Student acquires knowledge of emerging technologies and their applications in various processing techniques and products of various foods by processing and preservation methods.
20	FT-304	In plant training.	2017	<ul style="list-style-type: none"> - Provide hands on experience with regard to different areas in food industries. - Acquaint and gain knowledge related to production, unit operations, quality control and marketing aspects of food industry. - Emphasize the prominence of food plant sanitation, food safety, standards, laws and regulation in food industry.
21	FT-305(a)	(a)Unit operations in Food Industry. .	2017	<ul style="list-style-type: none"> - Important preliminary operations in food processing industries and understand the principle of Unit operation in food industry. - Impart knowledge on Safety, sanitation and Effluent Treatment in food industry. - Know the different pre and post processing operations as storage and packaging foods etc.
22	FT-305(a)	(b) Spices, Condiments and Plantation Crops	2017	<ul style="list-style-type: none"> - Students acquire knowledge, identification and post-harvest technologies of various spices, condiments and plantation crops. - Illustrate various value added products of spices, condiments and plantation crops.

				<ul style="list-style-type: none"> - Perceive Standards, specifications, packaging and Quality control measures of spices, condiments and plantation crops.
23	FT-305(a)	(c) Nutrition in Emergencies and Disaster	2017	<ul style="list-style-type: none"> - Explain concepts on Epidemiology and its application in planning programs during emergencies and emergency situations in natural and manmade disasters. - Gain knowledge on nutrition surveillance and treatment in emergencies. - Knowledge on planning nutrition relief and rehabilitation in emergencies.
24	FT-306(a)	(a)Fundamentals of Food, Nutrition and Health	2017	<ul style="list-style-type: none"> - Gain knowledge on foods, food groups, balanced diet and importance of macro and micronutrients for different age groups in daily diet. - Comprehend knowledge on deficiency symptoms of different nutrients. - Apply skills to assess on nutritional problems in community.
25	FT-306(b)	b)Nutritional Assessment	2017	<ul style="list-style-type: none"> - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups.
26	FT-401	Food Safety Standards and Quality Control	2017	<ul style="list-style-type: none"> - Gain knowledge in current rules and regulations of food safety standards and quality assurance. - Understand the insight quality evaluation

				<p>of different foods by standard methods.</p> <ul style="list-style-type: none"> - Develop skills for quality analysis and assurance of food quality.
27	FT-402	Food Product Development and Marketing	2017	<ul style="list-style-type: none"> - Elucidate the process of new food product development process to generate ideas, develop concept to test market and in food industry. - Acquire the skill to design and development of new food product and analyse the quality of the product. - Student able to design, demonstrate the skills in food process, organoleptic evaluation and nutritional label of food products as a team work.
28	FT-403	Nutrition for Health and Fitness/Project Work	2017	<ul style="list-style-type: none"> - Understand the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. - Describe the role of nutrients in physical performance, weight management, obesity and Energy metabolism pathways during physical activity. - Gain knowledge on concepts of physical activity, physical fitness and the importance of nutrients in Sports.
29	FT-404P	Food Safety standards and Product Development	2017	<ul style="list-style-type: none"> - Gain knowledge on subjective and objective evaluation methods of foods with safety and standards. - Exemplify various speciality food products and their applications, acquire the skill to design and development of new food product and analyse the quality of the product.
30	FT-405 (a)	(a) Institutional food service management	2017	<ul style="list-style-type: none"> - Gain knowledge on principles of safe

				food preparation and cooking methods and service management.
31	FT-405 (b)	(b)Basic Food Engineering	2017	<ul style="list-style-type: none"> - Student understands the basic Principles, overview of processing techniques and methods of food. - Able to describe the types and properties of agro processing equipments like pasteurizer, spray drier and sealing equipments. - Enumerate processing equipments and maintenance of processing equipments
32	FT-405 (c)	(c)Food Packaging	2017	<ul style="list-style-type: none"> - Enable the students to understand the regulations of packaging and packaging material testing. - Knowledge of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life. - Able to utilize some of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life.
33	FT-406(a)	(a) Child Welfare Programmes	2017	<ul style="list-style-type: none"> - Understand the different developments like physical, cognitive, language and social development during childhood. - Apply knowledge to understand normal development and developmental delays during childhood.
34	FT-406(b)	(b)Disaster Management	2017	<ul style="list-style-type: none"> - Understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters; - Illustrate the efforts made by the NGOs,

				Community based organizations and local administration in disaster management.
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37. Mathematics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	MA 101	Algebra	2020	<ol style="list-style-type: none"> 1. Identify the concept of action and conjugation. 2. Analyze the maximal, prime, nilpotent and Nil ideals. 3. Understand U.F.D and Polynomial Rings. 	
2.	MA 102	Real Analysis	2020	<ol style="list-style-type: none"> 1. Understand the concepts of Riemann Stieltjes integration and Differentiation. 2. Understand Uniform Convergence and continuity. 3. Learn comparison tests at a and infinity. 	
3.	MA 103	Ordinary Differential Equations	2020	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 1. Learn boundary value problems, Eigen values and Eigen functions 2. Solve the second order linear questions. 	
4.	MA 104	Complex Analysis	2020	<ol style="list-style-type: none"> 1. Decide when and where a given function is analytic . 2. Understand the Mobius Transformation. 3. Describe basic properties of complex integration and having the ability to compute such integrals. 4. Understand Power series and expansion of analytic 	

5.	MA 105	Computer Oriented Numerical Methods	2020	<ol style="list-style-type: none"> 1. Apply numerical methods to obtain approximate solutions to mathematical problems. 2. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 3. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	
6.	MA 106	Human Values and Professional Ethics-I	2020	<ol style="list-style-type: none"> 1. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study. 2. Understand human values . 3. Develop character, affection and love towards other human beings. 4. Know the value of Four Noble Truths of Buddhism 	
7.	MA 201	Galois Theory	2020	<ol style="list-style-type: none"> 1. Apply the knowledge on polynomials solvable by radicals, Extension field. 2. Understand the normal and separable extensions. 3. Study the roots of polynomials specially quintic polynomials which is the cause to develop Galois theory. <p>Solve the problems on cyclotomic polynomials</p>	

8.	MA 202	Partial Differential Equations	2020	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Apply various methods to solve Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's</p>	
9.	MA 203	Topology	2020	<p>1. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis.</p> <p>2. Understand Topological Spaces, definition & examples.</p> <p>3. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics.</p> <p>4. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem.</p>	

10.	MA 204	Advanced Complex Analysis	2020	<ol style="list-style-type: none"> 1. To learn Laurent Series-Singular Points. 2. Explain the basic properties of complex integration and compute such integrals. 3. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 4. Understand the Infinite product and Partial Fraction Expansions. 	
11.	MA 205	Measure and Integration	2020	<ol style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	
12.	MA 206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 1. Understand the fundamental responsibilities and respect towards women 2. Know the value of education. 3. Question the illegal practices in the medical and business fields. 4. Understand the value of ecological balance and act in such a way which saves it. 5. Analyze the impact of media. 	

13.	MA 301	Commutative Algebra	2020	<p>To understand the ideals, Modules and operations on them.</p> <p>2.To learn the structures of composition series with ACC and DCC</p> <p>2. To study the theoretical properties of Noetherian rings</p>
14.	MA 302	Functional Analysis	2020	<ol style="list-style-type: none"> 1) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 2) Comprehend the Open mapping theorem and Closed graph theorem. 3) Construct orthonormal sets and conjugate spaces. 4) Understand the relevance of self-adjoint operators, normal, unitary operators and projections.
15.	MA 303	Classical Mechanics	2020	<ol style="list-style-type: none"> 1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 2) Derive the Lagrange's Equation from Hamilton's Principle. 3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action.

16.	MA 304	A) Differential Geometry B) Cryptography C) Linear Algebra D) Discrete Mathematics	2020	<ol style="list-style-type: none"> 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. <ol style="list-style-type: none"> 1) Understand various Cryptographic Techniques. 2) Apply various public key cryptography techniques. 3) Understand the various Security Applications. 4) Implement system level security applications. 5) Be familiar with secure random bit generator and linear feedback shift register sequences. 6) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 7) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. <p>Solve the system of linear equations</p> <ol style="list-style-type: none"> 2. Understand the concept of vector space, basis, dimension and linear Transformation 3. Explain the direct sum decompositions 4. Understand the Bilinear forms. <ol style="list-style-type: none"> 1. Use standard Normal Forms-Disjunctive-Conjunctive Principal Disjunctive 2. Discuss Inference Theory of the Predicate Calculus 	
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17.	MA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2020	<ol style="list-style-type: none"> 1. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 2. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 3. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 4. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
18.	MA 401	Number Theory	2020	<p>.</p> <ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 2. Understand the concepts of Limit, continuity & differentiation of functions. 3. Apply Integrals to find areas, length & volume of regions. 4. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

19.	MA 402	Banach Algebra	2020	<ol style="list-style-type: none"> 1. Understand different types of Banach Algebras with examples. 2. Know the essence of Gelfand mapping 3. Understand the Application of Commutative C*- algebras. 4. Derive the applications of Banach Algebra in analysis, Fourier series, Boolean Algebras and other significant areas of mathematics. 	
20.	MA 403	Graph Theory	2020	<ol style="list-style-type: none"> 1. Able to define basic concepts of graphs 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and 	
21.	MA 404	A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research	2020	<ol style="list-style-type: none"> 1. To learn the fundamental concepts of statistics and techniques required for data analysis. 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence 	

22.	MA 405	A) Theoretical Computer science B) Biomechanics	2020	<ol style="list-style-type: none"> 1) Know the Basic concepts of Metric spaces And Normed Linear space. 2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces. 3) Knows Bernstein's lethargy theorem and its practical and theoretical implications. 4) Be able to use and analyze the basic methods for polynomial approximations. 	
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APPLIED MATHEMATICS:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
23.	AMA101	METHODS OF APPLIED MATHEMATICS	2020	<ol style="list-style-type: none"> 1. Expand a function in a Fourier series and able to know under what conditions such an expansion is valid. 2. Aware of the connection between integral transforms (Fourier and Laplace) and be able to use the latter to solve mathematical problems relevant to the physical sciences. 3. Understand the applications of Sylow theorems. 4. Describe Unique Factorization and Euclidean Domains. 	
24.	AMA 102	Real Analysis	2020	<ol style="list-style-type: none"> 5. Understand the concepts of Riemann Stieltjes integration and Differentiation. 6. Understand Uniform Convergence and continuity. 7. Learn comparison tests at a and infinity. 	

25.	AMA 103	Ordinary Differential Equations	2020	<p>Course outcomes: From this course students will be able to</p> <ol style="list-style-type: none"> 5. Learn boundary value problems, Eigen values and Eigen functions 6. Solve the second order linear questions. 	
26.	AMA 104	Complex Analysis	2020	<ol style="list-style-type: none"> 5. Decide when and where a given function is analytic . 6. Understand the Mobius Transformation. 7. Describe basic properties of complex integration and having the ability to compute such integrals. 8. Understand Power series and expansion of analytic 	
27.	AMA 105	Computer Oriented Numerical Methods	2020	<ol style="list-style-type: none"> 4. Apply numerical methods to obtain approximate solutions to mathematical problems. 5. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations. 6. Solve any numerical problem by using programming. <p>Develop interest in Numerical analysis to use finite precision computer arithmetic</p>	

28.	AMA 106	Human Values and Professional Ethics-I	2020	<p>5. Develop Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic virtue, Respect for others, Living Peacefully, Caring, Sharing, Honesty, Courage, Cooperation, Commitment, Empathy, Self Confidence character, Spirituality, Case study.</p> <p>6. Understand human values .</p> <p>7. Develop character, affection and love towards other human beings.</p> <p>8. Know the value of Four Noble Truths of Buddhism</p>	
29.	AMA 202	Partial Differential Equations	2020	<p>1. solve Pfaffian differential equations and find orthogonal trajectories of a curve.</p> <p>1. Analyze the origin of first order PDEs and Integral surfaces passing through a given curve</p> <p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Apply various methods to solve Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's</p>	

30.	AMA 203	Topology	2020	<ul style="list-style-type: none"> 5. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis. 6. Understand Topological Spaces, definition & examples. 7. Know the concepts connectedness, compactness, and Hausdorff property and their general characteristics. 8. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem. 	
31.	AMA 204	Advanced Complex Analysis	2020	<ul style="list-style-type: none"> 5. To learn Laurent Series-Singular Points. 6. Explain the basic properties of complex integration and compute such integrals. 7. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 8. Understand the Infinite product and Partial Fraction Expansions. 	
32.	AMA 205	Measure and Integration	2020	<ul style="list-style-type: none"> 1. Compute Lebesgue measures. 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, the MinKowski and Holder inequalities, Convergence and completeness 	

33.	AMA 206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 6. Understand the fundamental responsibilities and respect towards women 7. Know the value of education. 8. Question the illegal practices in the medical and business fields. 9. Understand the value of ecological balance and act in such a way which saves it. 10. Analyze the impact of media. 	
34.	AMA301	CONTINUUM MECHANICS	2020	<ol style="list-style-type: none"> 1) Be able to describe motion, deformation and forces in a continuum. 2) Be able to derive equations of motion and conservation laws for a continuum. 3) Understand constitutive models for fluids and viscoelastic solids. 4) Formulate and solve specific technical problems of displacement, strain and stress. 5) Perform experiments with stresses and deformations. 6) Numerically model and analyse the stresses and deformations of simple geometries under an arbitrary load in both solids and liquids. 	

35.	AMA 302	Functional Analysis	2020	<ul style="list-style-type: none"> 5) Work with different distance metrics and normed spaces, understand continuous linear transformations and the Hahn-Banach Theorem. 6) Comprehend the Open mapping theorem and Closed graph theorem. 7) Construct orthonormal sets and conjugate spaces. 8) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. 	
36.	AMA 303	Classical Mechanics	2020	<ul style="list-style-type: none"> 5) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 6) Derive the Lagrange's Equation from Hamilton's Principle. 7) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 8) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action. 	

37.	AMA 304	A) Differential Geometry B) Cryptography C) Semi group Theory D) Discrete Mathematics	2020	1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. 8) Understand various Cryptographic Techniques. 9) Apply various public key cryptography techniques. 10) Understand the various Security Applications. 11) Implement system level security applications. 12) Be familiar with secure random bit generator and linear feedback shift register sequences. 13) Know classical ciphers such as Vigenere Cipher and Hill Cipher. 14) Know of RSA, attacks on RSA, Diffie-Hellman key exchange and ElGamal, public key crptosystem. 1. Define space curves , curvature and torsion of a curve. 2. Parameterize surfaces and isometric correspondence. 3. Understand geodesic curves and conformal mapping. 4. calculate and analyse curvature of surfaces in different settings. Solve the system of linear equations	
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38.	AMA 305	A) Business Mathematics B) Basic Mathematics for social sciences	2020	<ul style="list-style-type: none"> 9. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 10. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. 11. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts 12. Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems. 13. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 14. Understand the concepts of Limit, continuity & differentiation of functions. 15. Apply Integrals to find areas, length & volume of regions. 16. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	
39.	AMA 401	Number Theory	2020	<p>.</p> <ul style="list-style-type: none"> 5. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 6. Understand the concepts of Limit, continuity & differentiation of functions. 7. Apply Integrals to find areas, length & volume of regions. 8. Apply the numerical Techniques to solve differential equations & Algebraic equations. 	

40.	AMA402	FLUID DYNAMICS	2020	<ol style="list-style-type: none"> 1) Be familiar with continuum model of fluid flow and classify fluid/flows based on physical properties of a fluid/flow along with Eulerian and Lagrangian descriptions of fluid motion. 2) Derive and solve equation of continuity, equations of motion, vorticity equation, equation of moving boundary surface, pressure equation and equation of impulsive action for a moving inviscid fluid. 3) Understand Boundary layer Equations. 4) Solve Analytic Boundary layer equations . 	
41.	AMA 403	Graph Theory	2020	<p>Able to define basic concepts of graphs</p> <ol style="list-style-type: none"> 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and 	
42.	AMA 404	<ol style="list-style-type: none"> A) Mathematical Statistics B) Approximation Theory C) Algebraic Coding Theory D) Operations Research 	2020	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <ol style="list-style-type: none"> 2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,. 2. To explain stochastic convergence 	

43.	AMA 405	A) Theoretical Computer science B) Biomechanics	2020	<p>5) Know the Basic concepts of Metric spaces And Normed Linear space.</p> <p>6) Knows existence and uniqueness theorems for the best approximations in various Banach spaces.</p> <p>7) Knows Bernstein's lethargy theorem and its practical and theoretical implications.</p> <p>8) Be able to use and analyze the basic methods for polynomial approximations.</p>
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38. Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
MB-102	Enzymology & Microbial Physiology & Metabolism	2020	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
MB-105	Introductory Microbiology	2020	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
MB-106	Human Values and Professional Ethics – I	2020	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
MB-202	Medical Microbiology	2020	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
MB-204P	Practical – II Medical Microbiology	2020	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types.

			Be able to perform various staining procedures. Be able to identify blood cell types.
MB-205	Basics of Virology	2020	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viral study. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plants viruses as: single stranded RNA (SS RNA), double stranded RNA (DS RNA); single stranded DNA (SS DNA) and double stranded DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
MB-206	Human Values and Professional Ethics –II	2020	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
MB 302	Recombinant DNA technology & Bioinformatics	2020	This course teaches RDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries. Student of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering
MB 305	b) food microbiology	2020	Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms.
MB-306	b) Industrial food Microbiology	2020	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts
MB 405b	Bioprocess engineering	2020	After completing this course, the student will be able to define a bacterium, a fungus, a virus and archaea, give examples of structurally different microbes, and list microbes by their energy metabolism and carbon sources. The student will be able to evaluate the cultivation, enrichment and growth prevention methods for microbes. The student will be able to explain the roles of microbes in elemental cycles on Earth and, the waste decontamination methods based on microbial activities. He/she will be able to judge how microbes and enzymes could be applied in industry.
MB-406a	Fermentation technology	2020	The course aims to provide fundamental insights to exploit microbes for manufacturing of products which have huge industrial significance. The course blends science and engineering with various biochemical processes to obtain products such as food, chemicals, vaccines, medicine. At the end of the course, the student will have a better appreciation for the role of microbes in industry using technology Able to design procedures, record research methodology and interpret the research
MB-406b	Pharmaceutical Microbiology	2020	This course prepares the students in appreciating the its benefits and applications in biotechnological, pharmaceutical, medical field.

39. INDUSTRIAL MICROBIOLOGY:

Course Code	Title of the Course	Years of	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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		Introduc tion	
IMB-102	Enzymology & Microbial Physiology & Metabolism	2020	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
IMB-105	Introductory Microbiology	2020	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
IMB-106	Human Values and Professional Ethics – I	2020	Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.
IMB-202	Medical Microbiology	2020	Be able to explain about various infections. Be able to understand the diagnostic methods. Be able to explain the symptoms of bacterial infections. Be able to explain the symptoms of viral, fungal and parasitic diseases.
IMB-204P	Practical – II Medical Microbiology	2020	Able performs various immune precipitations tests. Be able to perform various types of ELISA methods. Be able to gain practical knowledge about immunoglobulin's and there separation. Be able to perform widal, VDRL and types. Be able to perform various staining procedures. Be able to identify blood cell types.
IMB-205	Basics of Virology	2020	Explaining the biological and physical properties of viruses. Describing the differences between viruses vs. virion. Summarizing the different methods of viralstudy. Explaining tissue and cell culture. Discussing cloning genes and genomes, DNA sequencing and PCR. Listing analysis of components SDS treatment & electrophoresis for nucleic acids. Classifying plants viruses as:single strained RNA (SS RNA), double strained RNA(DS RNA); single strained DNA (SS DNA) and double strained DNA (DS DNA). Demonstrating knowledge about the genetic composition of plant viruses. Demonstrating knowledge of different viruses shape (rods, polyhedral and bullets). Describing the structure, replication and diseases caused by viruses in the families, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Astoviridae, Coronaviridae, and Arteriviridae. Explaining the structure, replication and diseases caused by viruses in the families, Rhabdoviridae, Paramyxoviridae, Filoviridae, Orthomyxoviridae, and Bunyaviridae
IMB-206	Human Values and Professional Ethics –II	2020	Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and health care professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions. Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.
IMB 305	b) Bioprocess Engineering and Technology	2020	Give elaborate knowledge on Health care products. Provide in depth knowledge about microbial antibodies and recombinant products. Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.

IMB-306	a) Industrial Biotechnology	2020	Be able to gain knowledge on strain improvement. Be able understand the whole broth processing. Gain knowledge on production of industrial products
	b)Immuno Technology and Human Health	2020	Immunology and Human Health is designed to advance your understanding of the Immune system and to apply this knowledge to basic immunological research of human diseases. The immune system is composed of numerous cells and molecules that act in concert to maintain health, to overcome infection, prevent tumour growth and repair damaged tissues. The study of the immune system provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (bacteria, viruses, protozoans and fungi). This subject provides a greater understanding of the complexity of the immune system and its responses to stresses such as infection. It demonstrates how modulation, or activation, of the immune system can either help overcome infection or may lead to autoimmune disease. Understanding the immune system gives us the potential to develop therapies to control events such as infection or autoimmune conditions. This subject helps students expand their understanding of current concepts in immunology and the potential application of applied immunology in medicine, research and industry.
IMB-404	Field Trip/ Industrial Tour Report / Dissertation	2020	Able to design procedures, record research methodology and interpret the research Able to design procedures, record research methodology and interpret the research
IMB-405	a) Biostatistics & Bioinformatics	2020	Be able to gain knowledge on basic concepts in statistics. Be able to design the experimental and statistical basics of biological assays. Be able to give familiarize with microbial genomes Be able to acquaint themselves with metagenomics Be able to learn basics of protein identification method Be able to gain knowledge on drug discovery
IMB-406	a) Microbes in Human Welfare	2020	Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.
	b) Medical and Diagnostic Microbiology	2020	Describe the aetiologies, epidemiology and basic mechanisms of pathogenesis of infectious diseases. Describe the basic principles of diagnosis, antimicrobial treatment, prevention and control of infectious diseases in the hospital and community. Describe the host immune system and explain the host response to infection Understand and interpret basic laboratory tests for the diagnosis of infectious diseases. Apply the principles of molecular and immunological techniques for the diagnosis of infectious diseases. Analyze and solve case studies involving bacterial and fungal agents

40. Physics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
	PHY 101	Classical Mechanics and Theory of Relativity	2020	<ol style="list-style-type: none"> 1. Formulate the Lagrangian and Hamiltonian mechanics concepts, solve the related problems 2. Learn the concepts of Poisson brackets, Hamilton-Jacobi equations and action angle variables. 3. Understand the Kepler's laws, Rutherford scattering, Euler's equations and solve the related problems 4. Learn the theory of relativity and its applications. 	
	PHY 102	Atomic and Molecular Physics	2020	<ol style="list-style-type: none"> 1. Understand the various basic concepts of atomic and molecular physics and know the analysis of different molecular spectra and then get the structural details. 2. Learn the concepts and importance of Zeeman effect, Stark effect and Paschen back effect 3. Understand the importance of rotational, vibrational and electronic spectra 4. Learn the various applications of atomic and molecular spectroscopy in different fields. 	
	PHY 103	Solid State Physics	2020	<ol style="list-style-type: none"> 1. Understand different bonds in solids, importance of lattice vibrations, their models and elastic properties 2. Explain electronic properties of solids in classical, quantum and the nearly free electron model. 3. Able to classify materials as metals, insulators and semiconductors and sketch the band diagram for each 4. Learn Hall effect and Heyness-Schockley experiment and their uses, properties, theories and applications of superconductors. 	

	PHY 104	Analog and Digital Electronics	2020	<ol style="list-style-type: none"> 1. Understand the design and working of BJT/FET/ MOSFETs based electronic circuits 2. Observe the effect of negative feedback on amplifier parameters, types of negative feedback topologies. Perceive the effect of positive feedback on working of Op-Amps based Oscillators. 3. Learn and understand the basics of digital electronics, Boolean algebra, and be able to design the simple logic circuits and test/verify the functionality of the logic circuits. 4. Develop the skill to build, and troubleshoot analog and digital electronic circuits. 	
	PHY 105	General Physics lab. - I	2020	<ol style="list-style-type: none"> 1. Determining the value of Planck's constant and Seebeck coefficient of a thermocouple, and also measurement and behavior analysis of semiconductor, laser, thermistor and white light dispersion. 2. Structural determination using X-ray diffraction method. 3. Learn the applications of lasers 4. Able to develop skills related to the said experiments in Physics. 	
	PHY 106	Electronics lab. - I	2020	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Set up testing strategies and select proper instruments to evaluate the performance characteristics of the electronic circuit. 3. Able to learn the applications of operational amplifiers 4. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 	
	PHY 201	Statistical Mechanics	2020	<ol style="list-style-type: none"> 1. Learn different ensembles and partition functions and their applications to thermal properties of solids 2. Understand the concept of partition functions and its applications 3. Understand the concepts of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distributions. 4. Disseminate the applications of Maxwell's distribution of velocities and various applications of systems behaving as ideal Bose gas or Fermi gas. 	

PHY 202	Electromagnetic Theory, Lasers and Modern Optics	2020	<ol style="list-style-type: none"> 1. Understand the laws related to electrostatics and magnetostatics 2. Learn about light propagation in various materials and understood properties of lasers and applications 3. Know holographic concept, use of Fourier transforms in optics 4. Learn the basics and construction of optical fibre and optical fibre applications
PHY 203	Mathematical Physics	2020	<ol style="list-style-type: none"> 1. Understand and apply the mathematical skills to solve quantitative problems in physics. 2. Apply Laplace and Fourier transforms in solving different problems of mechanics, electronics etc. 3. Solve different physical problems using numerical techniques 4. Understand complex variables and applications
PHY 204	Nuclear Physics and Analytical Techniques	2020	<ol style="list-style-type: none"> 1. know the concepts of nuclear reactions and their usefulness in nuclear reactors. 2. Learn the classification of elementary particles and its properties 3. apply the various analytical techniques in getting structural details of unknown compounds 4. understand the various advanced spectroscopic techniques and microscopic techniques
PHY 205	General Physics lab. - II	2020	<ol style="list-style-type: none"> 1. Using lasers in slit width calculation and refractive index measurement, 2. Understand phenomenon of interference through Young's modulus experiment 3. Intensity variation of light, photo transistor working, absorption and decay of nuclear adiation 4. Analyse the results and able to design the instruments

	PHY 206	Electronics lab. - II	2020	<ol style="list-style-type: none"> 1. Identify relevant information to supplement the Analog Electronic Circuits. 2. Choose testing and experimental procedures on different types of electronic circuits and analyze their operation at different operating conditions. 3. Under the architecture and working of 8085 microprocessor 4. Practice different types of wiring and instruments connections keeping in mind technical, Economical, safety issues. 	
	PHY 301	Quantum Mechanics – I	2020	<ol style="list-style-type: none"> 1. Solve problems in quantum mechanics using Schrodinger's equation and Dirac representation. 2. Grasp the concepts of different pictures and familiar with the applications 3. Know how the approximation methods applied to atomic, nuclear and solid-state physics. 4. Understand scattering theory, formulate and solve scattering equation- solve problems using this theory 	
	PHY 302	Physics of semiconductor devices	2020	<ol style="list-style-type: none"> 1. Classify different diodes and its importance in different applications 2. Gain theoretical knowledge on devices formation and able to fabricate devices 	

PHY 303	Specialization: A) Applied Spectroscopy-I B) Condensed Matter Physics-I C) Electronics-embedded systems	2020	1.Understand the molecular structure and importance of various molecular transition 2.know the rotational, vibrational and Raman spectroscopy of molecules and their various applications 3.Understand the concepts and instrumentation in different spectroscopic techniques 4.Learn about fluorescence and phosphorescence spectroscopy and their applications. 1. Learn the classification of growth techniques and its importance, able to analyze the defects and its importance in properties of solids, gain knowledge on defects importance in growth of crystals 2. Explain various magnetic phenomena and describe the different types of magnetic ordering based on the exchange interaction, and magnons and their importance 3.Understand different dielectric properties, differentiate between ferroelectric, anti-ferroelectric, piezoelectric and pyroelectric materials. 4.Learn excitons, photoconductivity, types of luminescence, decay mechanisms 1. Acquire knowledge about PIC microcontrollers embedded processors and their applications. 2. Develop programs for data transfer, arithmetic, logical and I/O port operations. 3. Develop program for PIC microcontroller timers, serial port and Interrupts using “C”. 4. Interface LCD, keyboard, ADC, DAC, sensors, relays, DC and stepper motor with PIC microcontroller.	
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	PHY 304	Elective: A) Photonics- I B) Solar Energy-Thermal Aspects C) Vacuum and Thin Film Technology	2020	<ol style="list-style-type: none"> 1. Understand the fundamental properties of lasers and laser systems 2. Know about the different optoelectronic devices and their behaviour 3. Aware of wide variety of applications of opto-electronic components. 4. Learn different modulations of light <ol style="list-style-type: none"> 1. Understand the fundamentals of solar energy, particularly the thermal energy component. 2. Acquire knowledge on solar radiation measurement techniques and procedures. 3. Demonstrate skills related collector performance analysis through hands on experience 4. Learn the working of different solar thermal energy systems <ol style="list-style-type: none"> 1. Learn production of vacuum and working of various pumps and gauges, design of vacuum system and detection of leak in system. 2. Basic concepts in preparing thin films, outline the conditions for deposition of amorphous, crystalline and epitaxial films. 3. Understand the thin film growth mechanism 4. Understand the working of thickness measurement instruments 	
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	PHY 305	Specialization-Lab.	2020	<ol style="list-style-type: none"> 1. Gain experience with some statistics to analyse data in laboratory. 2. Handle the spectrophotometers and could analyse the data. 3. Understand Zeeman effect practically 1. Identify the compounds based on qualitative analysis 1. Minority charge carrier current in calculation of band gap 2. Analysis of magnetic materials in terms of coercivity and saturation magnetization, 3. Creep importance in materials characteristics analysis 4. Transition temperature determination by finding dielectric constant, calculation of dispersion frequency of mono and diatomic lattices through electrical analog 1. Define the arithmetical and logical assembly language for microcontroller PIC 16F877A 2. Know the downloading procedure on hardware into flash ROM of PIC 16F877A 3. Show the testing data on a defined port wish board. 4. Competent to evaluate the data transfer response of PIC 16F877A. 	
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PHY 306	Elective - Lab	2020	<ol style="list-style-type: none"> 1. Demonstrate both the theory and experiments related to propagation and modulation of light 2. Learn the optical fibre working 3. Design the Hologram 4. Propose and design new experiments based on the verification of theory with available optical components 1. Demonstrate the skills related to measurement of direct, diffuse and global solar radiation. 2. Understand the working of a solar cell and its efficiency measurement 3. Verify the influence of different parameters on the solar cell efficiency 4. Design a solar module for a specific output current and voltage ratings. 1. Understand the working of rotary and diffusion pumps 2. Band gap determination of semiconductor thinfilm 3. Working of solar cell 4. Demonstrate the skill acquired in connection with thin film and device characterization 	
PHY 401	Quantum Mechanics - II	2020	<ol style="list-style-type: none"> 1. Learn distinguishability and indistinguishability of identical particles, construct symmetric and anti symmetric wave functions , students able to solve real problems 2. Grasp the concepts of spin and angular moment as well as their quantization and addition rules. Demonstrate angular momentum operators associated with spherical and symmetrical systems, able to obtain Clebsch –Gordon coefficients and learn its importance in atomic physics 3. Understand the principles of relativistic quantum mechanics and importance of Klein Gordon equation in solving real problems and know the concept of spin arising naturally from the Dirac equation 4. Learn different fields and its importance and gain knowledge about second quantization 	

	PHY 402	Advances in Physics	2020	<ol style="list-style-type: none"> 1. Understand the synthesis of nanomaterials, their application and impact on the environment. 2. Know the details of preparation and characterization of nanomaterials, micro and nanoscale devices. 3. Learn the basics of remote sensing, different payloads, sensors, satellite platforms. 4. Get the concept of image processing & interpretation and digital data transmission and storage. 	
	PHY 403	Specialization: A) Applied Spectroscopy-II B) Condensed Matter Physics-II C) Electronics-Wireless Communications	2020	<ol style="list-style-type: none"> 1. Have the knowledge on crystal field theory and the effect of weak crystal field on S, P, D and F terms. 2. Understand the importance of rare earth doped materials and able to evaluate various laser parameters. 3. Know the instrumentation techniques used in various spectrophotometers and uses of various detectors. 4. Acquire the knowledge on two photon spectroscopy. 1. Learn the relation between stress and strain and gain knowledge on elastic constants and velocity of elastic waves in different directions 2. Gain understanding on classical theory of specific heat and quantum theory of specific heat, able to understand Gruneisen parameter and lattice thermal conductivity 3. Know theories of different bands, Fermi construction and experimental determination of Fermi surface 4. Classify, know properties and applications of amorphous semiconductors, liquid crystals and polymers. 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Understand the importance of different communications 4. Fetch details in handling the fabrication, concepts of instrumentation and circuit design. 	

	PHY 404	Elective: A) Photonics - II B) Solar Energy- Photovoltaic Aspects C) Properties and Applications of Thin Films	2020	1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Understand the fundamental concepts of solar cells, manufacturing processes and limitations. 2. Acquire knowledge on cell efficiency study techniques and procedures for fault analysis. 3. Demonstrate skills related cell performance and fault analysis through hands on experience 4. Comprehend the applications of solar photovoltaic energy in day-to-day applications 1. Measure and analyze the chemical composition and microstructure of thin films. 2. Understand the electrical transport mechanism and optical behavior of thin films. 3. Able to understand the optical properties of thinfilms 4. Learn the various general and technical applications of thin films in day-to-day life.	
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PHY 405	Specialization-Lab. – II / Project Work	2020	<ol style="list-style-type: none"> 1. Use standardized material to determine an unknown concentration. 2. Handle the spectrophotometers and could analyse the data. 3. Learn the applications of ESR 4. Acquire basic knowledge in the field of research. <ol style="list-style-type: none"> 1. Magnetic susceptibility determination, liquid crystal phases with temperature, 2. Working of temperature sensor, heat capacity calculation 3. Resistance variation and measurement in semiconductor with temperature 4. Able to analyze the materials and its behavior <ol style="list-style-type: none"> 1. Understand and visualize the digital and optical modulation techniques. 2. Demonstrate the theoretical concepts in the laboratory. 3. Gain hands on experience and will be able to envisage the concepts more clearly. 4. Know the fabrication process, concepts of instrumentation and circuit design.
PHY 406	Elective – Lab. - II / Project Work	2020	<ol style="list-style-type: none"> 1. Get the experience on literature collection 2. Get the experience on selection of a problem independently related to recent work 3. Able to plan and execute the problem 4. Develop skills related to presentation of data, analysis discussion of the results and draw conclusions.

41. Psychology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	PSY 101	General Psychology-I	2020	<ul style="list-style-type: none"> • To understand the concepts and scope of psychology • To comprehend the biological basis of behavior • To study the perception and learning theories
2	PSY 102	Social Psychology	2020	<ul style="list-style-type: none"> • To understand the concepts of social psychology • To comprehend the social perception and cognition.

				<ul style="list-style-type: none"> • To study the socialization and attitudes
3	PSY 103	Psychopathology-I	2020	<ul style="list-style-type: none"> • To understand the abnormal behavior and historical and current trends • To comprehend the models of abnormal behaviour and approaches to therapies
4.	PSY 104	Psychological Measurements-I	2020	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
5	PSY 105P	Practical-I&II	2020	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
6.	PSY-106	Human Values and Professional Ethics-I	2020	
7.	PSY 201	General Psychology-II	2020	<ul style="list-style-type: none"> • To understand fundamentals of motivation and emotion • To understand basic concepts of memory and forgetting • To comprehend the thinking, intelligence and personality of individuals
8.	PSY 202	Applied Social Psychology	2020	<ul style="list-style-type: none"> • To understand the Social Influence, Social Exchange Process in social behaviour. • To comprehend the Prejudice and Discrimination and group and individuals.
9.	PSY 203	Psychopathology-II	2020	<ul style="list-style-type: none"> • To understand anxiety and mood disorders and somatic disorders. • To study Psychosis and Cognitive Disorders across life span
10.	PSY 204a	Psychological Measurements & Statistics	2020	<ul style="list-style-type: none"> • To understand the psychological measurements • To comprehend the development of psychological tests and principles of test construction.
	PSY 204b	Research Methodology	2020	<ul style="list-style-type: none"> • To get knowledge of psychological tests and their use

				<p>in diagnosis.</p> <ul style="list-style-type: none"> • To make students able to diagnose patients with the help of projective tests. • To get understanding of different diagnostic systems. • Learn how to take case history of patients. • To be able to make differential diagnosis.
	PSY 204c	Computer Applications in Psychological Research	2020	<ul style="list-style-type: none"> • To understand the basic components of computer and working in Ms Office, power point and internet services. • To comprehend the application of computer knowledge through creating emails, scientific journals and data scoring
11	PSY 205P	Practical - I & II	2020	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
12	PSY 206	Human values and Professional Ethics-II	2020	
13	PSY 301	Lifespan Developmental Psychology - Infancy to Adolescence	2020	<ul style="list-style-type: none"> • To understand the scope of life span development of infancy and babyhood • To comprehend the Early and Late Childhood and Adolescence.
14.	PSY 302	Personality	2020	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. To understand the Assessment of personality
15	PSY 303	Counseling Psychology-I	2020	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and techniques
16	PSY 304a	School Psychology	2020	<ul style="list-style-type: none"> • To introduce nature of school psychology • To help children with emotional, social, and academic issues.

				<ul style="list-style-type: none"> • To collaborate with parents, teachers, and students to promote a healthy learning environment.
	PSY 304b	Organizational Behaviour and HRM	2020	<ul style="list-style-type: none"> • To understand organization and the Individual differences • To comprehend the motivation and leadership To study the decision making and organizational effectiveness.
	PSY 304c	Health Psychology	2020	<ul style="list-style-type: none"> • To understand the need of Health psychology and various models related to health and illness. To comprehend the health behaviour enhancement and management
	PSY 304d	Psychology of Disability	2020	<ul style="list-style-type: none"> • To understand historical development – Models of disabilities in the past and present scenario To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
17	PSY 305P	Practical - I & II	2020	<ul style="list-style-type: none"> • To understand the knowledge about psychological assessment • To analyze the observed and the collected data to prove the theoretical
18	PSY 306	Personality Development (OE)	2020	<ul style="list-style-type: none"> • To study thebiological, psychological and socio cultural determinants &Soft Skills • To help determinants and development. • To understand the Assessment of personality
19	PSY 401	Lifespan Developmental Psychology – Adulthood and Later Maturity	2020	<ul style="list-style-type: none"> • To understand the scope of life span development of Adulthood and Later Maturity. • To comprehend the Adulthood and Later Maturity.
20	PSY 402	Theories of Personality	2020	<ul style="list-style-type: none"> • To introduce nature of personality. • To help determinants and development. • To understand the Assessment of personality
21	PSY 403	Counseling Psychology - II	2020	<ul style="list-style-type: none"> • To understand the meaning of counseling and ethics in counseling • To comprehend the process of counseling and

				techniques
22	PSY 404a	Psychology of Aging – Applied Aspects	2020	<ul style="list-style-type: none"> To study and understand the aging from maturity to old age. A form of discrimination against older adults based on their age. To notice gerontology and issues
	PSY 404b	Consumer Behaviour and Marketing	2020	<ul style="list-style-type: none"> To understand concept of consumer behaviour and market research To comprehend the economic, social and psychological theory of buying motives. To study the effect of advertising, sales promotion, branding and packaging
	PSY 404c	Rehabilitation Psychology	2020	<ul style="list-style-type: none"> To understand historical development – Models of disabilities in the past and present scenario To comprehend Learning and behavioral disability, Needs and concerns of disabled in all groups
23	PSY 405P	Practical I & II	2020	<ul style="list-style-type: none"> To understand the knowledge about psychological assessment To analyze the observed and the collected data to prove the theoretical
24	PSY 406	Life Skills (OE)	2020	<ul style="list-style-type: none"> To learn the concept of life skills and its importance in relation to personality development of an individual. To become aware of the components of life skills and the method of imparting knowledge of life skills.

COUNSELLING PSYCHOLOGY:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document

1.	PSY 101	General Psychology-I	2020	<ol style="list-style-type: none"> 1. Understood the concepts and scope of psychology 2. Comprehended the biological basis of behavior 3. Studied the perception and sensation 4. Understood the concepts and learning theories 	
2.	PSY 102	Social Psychology	2020	<ol style="list-style-type: none"> 1. Understood the concepts of social psychology 2. Comprehended the social perception and cognition. 3. Studied the Socialization 4. Understood the meaning and theories attitudes 	
3.	PSY 103	Psychopathology-I	2020	<ol style="list-style-type: none"> 1. Understood the meaning abnormal behavior and historical and current trends 2. Comprehended the models of abnormal behaviour and approaches to therapies 3. Learned about classification and assessment of abnormal behaviour 4. Able to evaluate different approaches to therapies for abnormal behaviour 	
4.	PSY 104	Psychological Measurements-I	2020	<ol style="list-style-type: none"> 1. Understood the assessment and psychological measurements 2. Comprehended the development of psychological tests and principles of test construction. 3. Learned the Principles of Test Construction 4. Understood the test Development and test Standardization Procedures 	
5.	PSY 201	General Psychology-II	2020	<ol style="list-style-type: none"> 1. The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting 3. Comprehended the thinking and intelligence 	

6.	PSY 202	Applied Social Psychology	2020	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and individuals. 	
7.	PSY 203	Psychopathology-II	2020	<ol style="list-style-type: none"> a. Understood anxiety and mood disorders b. Acquainted with somatic disorders. c. Studied Psychosis and Cognitive Disorders d. Understood Psychological Disorders Across the Life Span 	

8.	PSY 204	<ul style="list-style-type: none"> a. Psychological Measurements & Statistics b. Research Methodology c. Computer Applications in Psychological Research 	2020	<ul style="list-style-type: none"> 1. The students acquainted with intelligence and achievement tests 2. The students learned the measurement of personality tests 3. They are clear in understanding the Statistics for Psychological Measurement 4. They have knowledge on Distribution of Scores on Variables <p>1. Understood basic research and applied research including experimental research.</p> <ul style="list-style-type: none"> 1. The students comprehended the problem & hypothesis 2. Gained knowledge on Sampling & Data Collection 3. Understood the application of research designs <p>1. Understood the basic components of computer</p> <p>2. Acquainted with Ms Office, power point and internet services.</p> <p>3. Comprehended the application of computer knowledge through creating emails, scientific journals and data scoring</p> <p>4. Able to understand Statistical Packages and its application</p>	
9.	CPSY 301	Counselling Process	2020	<ul style="list-style-type: none"> 1. Understood the counseling as helping profession 2. To acquire the relation with other helping professions 3. To know the legal and ethical issues 4. Developed the importance of verbal and non 	

10.	CPSY 302	Counselling Skills	2020	<ol style="list-style-type: none"> 1. Understood the micro-skills of counseling through a series of practices. 2. Got an idea about who to understand the people and interpret their feelings with positive appreciation 3. To provide a space where participants can grow, in the sense of allowing an encounter with them first and based on this encounter to achieve a better understanding of how they impact on other people. 4. The ability to examine and assess the clients with scientific manner.
11.	CPSY 303	Therapeutic Approaches in Counselling –I	2020	<ol style="list-style-type: none"> 1. Understood the various Therapeutic Approaches of counseling. 2. Understood the techniques relevant to therapies. 3. To acquires the basic procedures. 4. Learned how to touch in the insight of the client
12.	CPSY 304A	a. Foundations of Personality	2020	<ol style="list-style-type: none"> 1. Understood nature of personality. 2. Realized the determinants of personality 3. Found that the development of Personality. 4. Understood the Assessment of personality
13.	CPSY 304B	b. Lifespan Developmental Psychology – Infancy to Adolescence	2020	<ol style="list-style-type: none"> 1. Exposed the students to the basics of human development 2. Helped the student understand the stages of development 3. Understood the biological, social and emotional development 4. Able to evaluated the behavior of the individual at various stages.

14.	CPSY 304C	c. Psychology of Disability	2020	<ol style="list-style-type: none"> 1. Understood the historical development and models of disabilities 2. Acquire the knowledge of assessment of disability. 3. Expertised on handling the disabled Behavior 4. Collected the knowledge about various service organizations
15.	CPSY 305	Practical I & II	2020	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills 3. The students acquainted with soft skills 4. They learned more on Soft skills
16.	CPSY 401	Applications of Counselling in Special Areas	2020	<ol style="list-style-type: none"> 1. Understood how to handle the client with various problems and hailing into different age groups. 2. Learned how to handle the clients with specific problems 3. To attained what is career, personal, vocational and other applied areas of counseling 4. Gained how to organize Counseling programs to handle special concerns in Different social settings.
17.	CPSY 402	Therapeutic Approaches in Counselling –II	2020	<ol style="list-style-type: none"> 1. Understood the therapeutic approaches of counseling 2. Improve the major skills in therapeutic techniques 3. Gained specific methods involved in therapy 4. Adopted the different psycho therapeutic models of counseling.

18.	CPSY 403	Family Counselling	2020	<ol style="list-style-type: none"> 1. Understand the need and importance of family counseling. 2. Improved how to handle the family issues 3. To maximized use of tools in counseling 4. Learned the specific skills to handle family issues.
19.	CPSY 404A	a. Theories of Personality	2020	<ol style="list-style-type: none"> 1. Understood the Psychoanalytic Approach 2. Learned on behavioural approaches to personality. 3. The students comprehended the Humanistic approach 4. The students acquainted with the eastern theories of personality
20.	CPSY 404B	b. Lifespan Developmental Psychology – Adulthood and Later Maturity	2020	<ol style="list-style-type: none"> 1. Understood about adult hood 2. Aware of infancy late adult hood problems 3. Identified the early and late old age issues. 4. Acquired the developmental tasks at all ages.
21.	CPSY 404C	c. Rehabilitation Psychology	2020	<ol style="list-style-type: none"> 1. The students understood historical development – Models of disabilities in the past and present scenario 2. The students comprehended Assessment of Disability, Psychological Aspects 3. The students are aware of Behavioral Management 4. They acquainted with Organizational services
22.	CPSY 405	Practical I & II	2020	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills. 3. The students have learned more on Life Skills in Specific 4. They acquainted with Self management skills

41. Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	ST - 101	Linear Algebra	2020	<ol style="list-style-type: none"> 1. Students understood for estimation of elementary transformations in matrix and their solutions. 2. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 3. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 4. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	
	ST - 102	Probability Theory	2020	<ol style="list-style-type: none"> 1. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 2. Students also know the weak law, strong law and central limit theorem and their importance. 3. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	

ST - 103	Distribution Theory	2020	<ol style="list-style-type: none"> 1. Students know about different continuous and discrete distributions and their properties. 2. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 3. Students get the knowledge of the statistical Tests and their real life uses and applications. 4. Students get the knowledge of Regression and Correlations and their real-life applications 	
ST - 104	Practical-I (75 Practical + 25 Record)	2020	<ol style="list-style-type: none"> 1. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 2. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 3. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	
ST - 105	Statistical Computing	2020	<ol style="list-style-type: none"> 1. Students get the basic Programming Skills of C and C++. 2. Students learnt how the Data entre in the Excel with Headings. 3. Students get the knowledge of creating data ase using the MS-Access. <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	

ST - 106	Human Values and Professional Ethics-I	2020	<ol style="list-style-type: none"> 1. Students get the knowledge of the Ethical values. 2. Students get the idea about the Value education. 3. Students learn how to behave in Society. 4. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's. 	
ST - 201	Statistical Inference	2020	<ol style="list-style-type: none"> 1. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 2. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 3. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). <p>They can also calculate the problems related to point estimation and interval estimation.</p>	
ST - 202	Multivariate Analysis	2020	<ol style="list-style-type: none"> 1. Students learnt about importance of multivariate variables and their distributions 2. T^2, D^2, MANOVA models are understood and know it's importance. 3. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	

	ST-203 A & B & C	<p>(a) Linear Models and Applied Regression Analysis</p> <p>(b) Stochastic Processes</p> <p>(c) Mathematical Analysis</p>	2020	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 1. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 2. They know R^2, adjusted R^2 and C_p criteria for model selection. 3. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 1. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 2. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 3. Understand the consequences of the Intermediate value theorem for continuous function. 4. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 1. Students get the knowledge of real no.'s and set theory and their theories. 2. Students easily earn the knowledge of the sequencing theory. 3. Students get the knowledge if the integrations and their applications in the real life. 	
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ST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2020	<ol style="list-style-type: none"> 1. Students know about the solving of Numerical problems related to Multivariate data. 2. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data. 3. They can also use the statistical tools and techniques for analyzing the statistical data. <p>Students can solve the agriculture related problems using the Regression Methods.</p>	
ST - 205	Sampling Techniques	2020	<ol style="list-style-type: none"> 1. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models. 2. Students studied non-Sampling errors and different remedies. 3. Implement Cluster sampling, Ratio and Regression estimation in real life problems 4. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's 	
ST - 206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 1. Students get the Knowledge of Status of Women in the family and society. 2. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners. 3. Students get the idea about the environmental Ethics. 4. Students Get the knowledge of Human Rights. 	

ST - 301	Econometric Methods	2020	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
ST - 302	Design and Analysis of Experiments	2020	<ol style="list-style-type: none"> 1. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 2. Students understood about Latin squares and their construction, missing plot technique etc. 3. Students explained about Incomplete Block Designs and their analysis, etc. 4. Understand the basic terms used in design of experiments by using appropriate experimental methods 	
ST -303	Operations Research-I	2020	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

ST -304	Practical-III (75 Practical + 25 Record)	2020	<p>Students can understand the Statical Methos in Economical Views.</p> <p>Students solved the Numerical problems related to operations research.</p> <p>Students Understand the Life Tables in Demography.</p> <p>Students can understand how the statistics use in biological aspects.</p>	
ST-305A	(a)Bio-Statistics	2020	<ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models. 3. Apply the concept of deterministic and stochastic models on simple and general epidemics. 4. Understand linearization of dynamical systems with various dimensions. 	
ST - 306	(a) Statistics for Biological and Earth Sciences	2020	<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students used Advanced statistics tools with working illustrations. 	

	ST - 401	Time Series Analysis and Forecasting Methods	2020	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. 4. Check and validate models with its residual analysis and diagnostic checking. 	
	ST - 402	Demography and Official Statistics	2020	<ol style="list-style-type: none"> 1. Students know the growth rates, life tables, GRR, NRR and growth models. 2. Students understood about gene frequencies, genotypes, phenotypes etc. 3. Students learnt about population census methods, organizations in India and their functions. 4. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 	

	ST - 403	Operations Research-II	2020	<ol style="list-style-type: none"> 1. To perform Dynamic programming and their applications and computation procedure with illustration. 2. To discuss different Queuing models steady state solutions with examples. 3. To explain Inventory models with and without shortages, S-splicity, EOQ estimation with simple examples. <p>To understand Replacement problems such as block and age replacement problems, individual and group replacement policies with examples.</p>	
	ST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2020	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	

	ST-405 A	(a) Statistical Process and Quality Control	2020	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
	ST-405 B	Statistics for research, industry and Communitydevelopment	2020	<ol style="list-style-type: none"> 1. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 2. Students can understand the basic of research blooms taxonomy of learning levels. 3. Find the topic from current research in statistics education. 4. Students can apply the tools in design, research and developments. 	

	ST-405 C	Advanced Econometric Models	2020	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed probit, logit models and their estimation. <p>Students can understand the qualitative and limited dependent variable models.</p>	
	ST - 406 A	Business Analytics	2020	<ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students studied basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students performed advanced statistics tools for solving the problems. 	

	ST-406 B	(b) Survival Analysis	2020	<ol style="list-style-type: none"> 1. Students learnt about survival functions, their estimating methods, Distributions and their comparison for survival distributions. 2. Understand the elements of reliability, hazard function and its applications. 3. Understand the concept of censoring, life distributions and ageing classes. 4. Estimate nonparametric survival function of the data. 	
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Applied Statistics

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	APST - 101	Linear Algebra	2020	<ol style="list-style-type: none"> 5. Students understood for estimation of elementary transformations in matrix and their solutions. 6. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 7. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 8. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases 	

APST - 102	Probability Theory	2020	<ol style="list-style-type: none"> 4. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 5. Students also know the weak law, strong law and central limit theorem and their importance. 6. Students get the knowledge of the Central limit theorem and their real life uses. <p>Students can get the knowledge of the inequalities of probability and their uses.</p>	
APST - 103	Distribution Theory	2020	<ol style="list-style-type: none"> 5. Students know about different continuous and discrete distributions and their properties. 6. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients. 7. Students get the knowledge of the statistical Tests and their real life uses and applications. 8. Students get the knowledge of Regression and Correlations and their real-life applications 	
APST - 104	Practical-I (75 Practical + 25 Record)	2020	<ol style="list-style-type: none"> 4. Numerical problems related to, Linear Algebra and Sampling Techniques are solved by executing programs of computers. 5. Linear algebra concepts when working with data preparation, such as one hot encoding and dimensionality reduction. 6. Applying linear algebra problems in real life situations. <p>Perform sampling methods analysis using R-software.</p>	

APST - 105	Statistical Computing	2020	<p>4. Students get the basic Programming Skills of C and C++.</p> <p>5. Students learnt how the Data entre in the Excel with Headings.</p> <p>6. Students get the knowledge of creating data ase using the MS-Access.</p> <p>Students get the knowledge how to create the reports using MS-EXCEL and MS ACCESS.</p>	
APST - 106	Human Values and Professional Ethics-I	2020	<p>5. Students get the knowledge of the Ethical values.</p> <p>6. Students get the idea about the Value education.</p> <p>7. Students learn how to behave in Society.</p> <p>8. Students get the knowledge of the Bhagavat Geetha and Can apply in their life's.</p>	
APST - 201	Statistical Inference	2020	<p>4. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary.</p> <p>5. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions.</p> <p>6. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test).</p> <p>They can also calculate the problems related to point estimation and interval estimation.</p>	

	APST - 202	Multivariate Analysis	2020	<ol style="list-style-type: none">4. Students learnt about importance of multivariate variables and their distributions5. T^2, D^2, MANOVA models are understood and know it's importance.6. Implement dimension reduction techniques using software on real life problems. <p>Classification analysis methods explained according to their classification algorithm.</p>	
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	APST-203 A & B & C	(a) Linear Models and Applied Regression Analysis (b) Stochastic Processes (c) Mathematical Analysis	2020	<p>A. Linear Models and Applied Regression Analysis</p> <ol style="list-style-type: none"> 4. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 5. They know R^2, adjusted R^2 and C_p criteria for model selection. 6. They will get the knowledge of building and fitting linear regression models with software. <p>They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.</p> <p>(b) Stochastic Processes</p> <ol style="list-style-type: none"> 5. Students understood stochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 6. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 7. Understand the consequences of the Intermediate value theorem for continuous function. 8. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems. <p>(c) Mathematical Analysis</p> <ol style="list-style-type: none"> 4. Students get the knowledge of real no.'s and set theory and their theories. 5. Students easily earn the knowledge of the sequencing theory. 6. Students get the knowledge if the integrations and their applications in the real life. 	
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APST - 204	Practical-II (75 Practical + 15 Viva- voce + 10 Record)	2020	<p>4. Students know about the solving of Numerical problems related to Multivariate data.</p> <p>5. Students can learn how the Statistical tests uses in their real life's by doing the tests on the Real times Data.</p> <p>6. They can also use the statistical tools and techniques for analyzing the statistical data.</p> <p>Students can solve the agriculture related problems using the Regression Methods.</p>	
APST - 205	Sampling Techniques	2020	<p>5. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models.</p> <p>6. Students studied non-Sampling errors and different remedies.</p> <p>7. Implement Cluster sampling, Ratio and Regression estimation in real life problems</p> <p>8. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's</p>	
APST - 206	Human Values and Professional Ethics-II	2020	<p>5. Students get the Knowledge of Status of Women in the family and society.</p> <p>6. Students get the idea of the Medical Rights and Their responsibilities in the medical practitioners.</p> <p>7. Students get the idea about the environmental Ethics.</p> <p>8. Students Get the knowledge of Human Rights.</p>	

APST - 301	Applied Econometrics	2020	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications. 	
APST - 302	Experimental Design and Applications	2020	<p>Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests.</p> <p>Students understood about Latin squares and their construction, missing plot technique etc.</p> <p>Students explained about Incomplete Block Designs and their analysis, etc.</p> <p>Understand the basic terms used in design of experiments by using appropriate experimental methods.</p>	
APST -303	Applied Operations Research	2020	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques. 	

APST -304	Practical	2020		<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. <p>Students can understand how the statistics use in biological aspects.</p>	
APST-305A	(a)Bio-Statistics	2020		<ol style="list-style-type: none"> 5. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 6. Describe single and multi-species population growth models. 7. Apply the concept of deterministic and stochastic models on simple and general epidemics. 8. Understand linearization of dynamical systems with various dimensions. 	
APST - 306	(a) Statistics for Biological and Earth Sciences	2020		<p>a) Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 5. Students learnt about Graphs, measures of averages, measures of dispersion etc. 6. Students understood about Basic probability and important distributions with workout examples. 7. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 8. Students used Advanced statistics tools with working illustrations. 	

APST - 401	Applied Forecasting Methods	2020		<ol style="list-style-type: none"> 1. 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. <p>Check and validate models with its residual analysis and diagnostic checking.</p>	
APST - 402	Applied Demography and Official Statistics	2020		<ol style="list-style-type: none"> 5. Students know the growth rates, life tables, GRR, NRR and growth models. 6. Students understood about gene frequencies, genotypes, phenotypes etc. 7. Students learnt about population census methods, organizations in India and their functions. 8. Useful to students as a means of analyzing and predicting social, cultural, and economic trends related to population. 9. . 	
APST - 403	Reliability Theory & Survival Analysis	2020		<ol style="list-style-type: none"> 1. Students learnt about and survival analysis with their related distributions, relationships, non-parametric methods for computing survival analysis. 2. Estimate nonparametric survival function of the data. 3. Explain test of exponentiality against nonparametric classes, two sample problems. <p>Understand the elements of reliability, hazard function and its applications.</p>	

APST - 404	Practical-IV (75 Practical + 15 Viva-voce + 10 Record)	2020	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects. 	
APST-405 A	(a) Statistical Process and Quality Control	2020	<ol style="list-style-type: none"> 1. Students understood the basic concepts of control charts for variables and their indices. 2. Students performed different control charts like Shewart's moving average, multivariate etc. with their applications. 3. Students used different sequential sampling plans and six sigma tool etc. in solving the problems. 4. Students have awareness about Total Quality Management. 	
APST-405 B	Statistics for research, industry and Communitydevelopment	2020	<ol style="list-style-type: none"> 5. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 6. Students can understand the basic of research blooms taxonomy of learning levels. 7. Find the topic from current research in statistics education. 8. Students can apply the tools in design, research and developments. 	

	APST-405 C	Actuarial Statistics	2020	<ol style="list-style-type: none"> 1. Students get the knowledge of the Economic interest rates and discount rates. 2. Students know how to construct the life tables based on the Expectancy. 3. Students to get awareness of the life annuities. 4. Students ensure how to build joint life annuities and life survivor annuities. 	
	APST - 406 A	Statistics for Marketing Research	2020	<ol style="list-style-type: none"> 1. Students learnt about Research design and how to frame questionnaire etc. 2. Statistics relating to research like univariate test like Z, t, F, ANOVA, CRD, RBD and LSD are done. 3. Multivariate statistical techniques like factor analysis, dissemination analysis and cluster analysis are used. 4. Students can understand how the marketing is happening in the real life. 	

	APST-406 B	(b) Statistical analysis using SPSS	2020	<ol style="list-style-type: none"> 1. Able to create and manipulate vectors, matrices, arrays, data frames and lists. 2. Should be able to work with character data, factor data and dates. 3. Able to write scripts and function in R and read data from .csv files, EXCEL files and SPSS files. <p>Able to use built-in functions to answer questions relating to probability distributions, parametric and</p>	
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43. Virology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	VR-101	Biological Chemistry	2020	<p>Acquire knowledge on major elements and biomolecules of life and their characteristics.</p> <p>CO2: Learn the classification, structure, properties and functions of carbohydrates, lipids, proteins, classification and properties of enzymes and enzyme kinetics</p> <p>CO3: Explain the types, structure and functions of nucleic acids, hormones, growth regulators and vitamins.</p> <p>CO4: Learn the concepts of bioenergetics and biosynthesis of carbohydrate, lipid, carbohydrates, and proteins. .</p>
2	VR-102	Analytical Techniques	2020	<ol style="list-style-type: none"> 1. To understand the approaches involved in characterization and concentration of biomolecules and to train students in adopting various techniques involved in biological research such as microscopic, 2. To understand the approaches involved in chromatographic, centrifugal, and electrophoretic techniques. 3. To learn about various radioisotopes, spectroscopy and cell counting techniques that are used for characterization of biomolecules and

				4. To learn about basic concepts of biostatistics such as measures of central tendency and dispersion, correlation and regression analysis, probability distribution and tests of significance.
3	VR-103	Biological Chemistry and Analytical Techniques	2020	<p>Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of major biomolecules such as proteins, carbohydrates, lipids and nucleic acids.</p> <p>Knowhowto isolate and check the activity of enzymes from various sources.</p> <p>Learn to useultrafiltration, chromatography, and electrophoresis techniquesfor isolation and characterization of biomolecules.</p> <p>Acquire the skills to usespectroscopic and centrifugal methods for characterization of biomolecules.</p>
4	VR-104	General Microbiology and Virology	2020	<p>Define laboratory safety measures that needs to be followed in Virology and Microbiology laboratories and know how to use different sterilization methods and preparation of media.</p> <p>Acquire the practical skills to usecultivation, staining and characterization methods for different microorganisms and to check their stability under various conditions.</p> <p>Learn to isolate bacteriophages from different sources and cultivate viruses in embryonated eggs and plants.</p> <p>Demonstrate the mechanical, aphid and graft transmission of plant viruses and methods used to check the stability of viruses and determine the effect of virus infection on plants through chlorophyll estimation.</p> <p>-</p>
5	VR-105	General Microbiology and	2020	1. To acquire the knowledge on origin, evolution, and importance of microorganisms, microbial taxonomy, morphology, and structure of bacteria

		Virology		<p>and</p> <ol style="list-style-type: none"> To learn cultivation, control strategies of microorganisms and to learn about important microbial diseases and host pathogen interactions. To understand the physical, biochemical, biological, and molecular properties of viruses and To learn isolation, cultivation and purification methods used for viruses, biology of bacteriophages and subviral agents.
6	VR-106	Human values and Professional ethics - I	2020	<p>To enable the students to imbibe and internalize the moral values and ethical principles</p> <ol style="list-style-type: none"> To learn ethics moral and social values and ethical behavior in the personal and Professional lives. To learn the rights and responsibilities and to appreciate the rights of others and to create awareness on religious values and other good acts and facts of life. To acquire knowledge about the important facts of Bhagavad Gita, values hidden in religions, religious tolerance and aware of crime, and punishment theories
8	VR-201	Cell and Molecular Biology	2020	<ol style="list-style-type: none"> To gain understanding of structural and functional organization of prokaryotic and eukaryotic cells, types of cell division and their regulation, cell communication and signaling To discuss Mendelian laws, prokaryotic and eukaryotic genome organization, extrachromosomal elements and gene transfer and mapping mechanisms in bacteria. To attain knowledge about the processes involved in central dogma viz. replication, transcription, reverse transcription and translation, mechanisms of DNA damage and repair To learn regulation of gene expression, mutations, and gene silencing mechanisms
9	VR-202	Recombinant DNA Technology	2020	<p>To learn the scope, importance of genetic engineering, basic steps of gene cloning and the role of enzymes, vectors, oligonucleotides, and hosts in gene manipulation.</p> <ol style="list-style-type: none"> To learn basic and advanced tools and techniques, approaches and strategies used in

				<p>gene manipulation in prokaryotic and eukaryotic systems</p> <p>3. To learn the gene cloning strategies and learn the concepts and applications of genomics, proteomics, transcriptomics, and introduction to metagenomics, viromics.</p> <p>4. To understand the strategies used for gene expression in heterologous hosts and applications/implications of genetic engineering in agriculture, medicine, industry and biology.</p>
10	VR-203	Cell and Molecular Biology & Recombinant DNA Technology	2020	<p>Learn the safety practices and precautions to be followed in setting up molecular biology laboratory with ribonuclease free environment.</p> <p>Isolate cells, DNA and RNA from plant and animal tissues, demonstrate mitosis, plasmid curing, replica plate and gradient plate methods.</p> <p>Acquire practical skills to isolate plasmids, restriction enzyme digestion of DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the southern and dot blot preparation for hybridization.</p> <p>Solve the problems related to molecular biology and recombinant DNA technology and learn the basic bioinformatic tools that are important for DNA analysis.</p>
11	VR-204	Immunology	2020	<ul style="list-style-type: none"> - Illustrate basic immunology techniques such as counting of RBC and WBC, estimation of hemoglobin, identification of the blood groups and Rh. - CO2: Identify of primary and secondary lymphoid organs in virtual animal model - Demonstrate antigen-antibody interactions by conducting <i>in vitro</i> serological tests such as immunodiffusion and immune electrophoresis. - Conduct DAC-ELISA, Dot-ELISA, and western blotting to identify important pathogens based on antigen-antibody interactions. Apply the practical oriented knowledge to foster employability in private industries, higher education in

				premier institutes.
12	VR-205	Immunology	2020	<ul style="list-style-type: none"> - Discuss the history of immunology, types of immunity, cells and organs of immune system and types and properties of antigens. - Understand the types, structure and biological activities of antibodies, concepts of <i>in vivo</i> and <i>in vitro</i> antigen-antibody interactions and discuss the properties and functions of cytokines, Toll-like receptors and complement components and activation pathways - Describe the induction and mechanism of humoral and cell mediated immune responses, interaction between innate and adaptive immune responses through MHCs and antigen presentations and hypersensitivity reactions. - Learn about the basis of autoimmune and immunodeficiency disorders, basic of transplantation and cancer immunology, concepts, and applications of conventional and modern vaccines.
13	VR-206	Human values and Professional ethics - II	- 20 20	<ul style="list-style-type: none"> - Understand the definition of value education, concept of human and family values, components, structure, and responsibilities of family system and acquire reflective thinking, rational skepticism. - Describe the moral responsibilities and ethical issues of medical and health care professionals, avoid unethical things, learn ethical issues raised in genetic engineering and new biological technologies. - Learn to practice ethical standards in business by understanding ethical theories and maintain work ethics to build trust between businessman and consumer and avoid unethical behavior and ethical abuse and develop scientific temper, digital literacy. - Learn to practice environmental ethics by taking responsibility to protect

				environment and ecosystem and understand the importance of maintenance of social ethics and ethics of media.
14	VR-301	Plant Virology	2020	<p>Understand the induction of plant virus diseases, virus-host interactions and movement strategies.</p> <p>Learn the vector and non-vector modes of plant virus transmission, virus-vector relationships and molecular mechanisms involved in virus vector interactions and the approaches used for identification and characterization of the viruses and virus strains. Acquire the knowledge on plant virus spread and survival in nature and approaches used to detect plant viruses and diseases.</p> <p>Describe the approaches used for the control and management of plant viruses and vectors and strategies used for acquiring plant virus resistance.</p>
15	VR-302	Plant Viruses and Diseases	2020	<p>Describe the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of cereals, millets and oil seed crops.</p> <p>Learn the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of vegetable and tuber crops.</p> <p>Acquire the knowledge of incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of food legume and fruit crops.</p> <p>Discuss the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of cash, spice, beverage, flowering and foliage ornamental crops</p>
16	VR-	Plant Virology and	2020	- Identify major virus diseases of local economically important crop plants and

	303	Plant Virus Diseases		<p>weeds through theory exercises, local field surveys, agricultural research station visits.</p> <ul style="list-style-type: none"> - Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts. - Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules. - Identify local plant virus vectors, determine virus disease incidence and progress curves through local field visits. <p>V.</p>
17	VR-304	a) Molecular Virology (OR) b) Tumor Virology	2020	<p>Acquire skills to detect carcinogens and mutagens using standard tests such as Ames test.</p> <p>Distinguish transformed and normal cell lines and determine the anticancer property of biologically active compounds.</p> <p>Design and execute PCR and other point of care methods using commercial kits for detection of tumor viruses (HCV, HIV).</p> <p>Perform cultivation of poultry tumor viruses in cell cultures and acquiring the knowledge on histopathology of animal tumor viruses.</p>
18	VR-305	(a) Molecular Virology	2020	<ul style="list-style-type: none"> - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, clarification using organic solvents and low speed centrifugation, precipitation using sodium chloride or ammonium sulphate or polyethylene glycol or differential centrifugation, preparation of step and linear density gradients, further purification of viruses using sucrose density gradient centrifugation and final pelleting by ultrafiltration or ultracentrifugation and to check the quality and quantity of viruses using spectroscopy or transmission electron microscopy. - Isolate virus coat proteins and determine its size and molecular weight through SDS-PAGE.

		(OR)		<ul style="list-style-type: none"> - Isolate virus nucleic acids (dsRNA, RNA and DNA) and determine its size and molecular weight through agarose gel electrophoresis. - Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation.
		(b) Tumor Virology		<ul style="list-style-type: none"> - Acquire knowledge about principles of virus architecture and effect of physical and chemical agents on viruses. - Learn about structure and diversity of viral genomes, general concepts of replication of viruses and expression and replication of DNA viruses - Learn about expression and replication of different RNA viruses and subviral agents such as viroids, Satellite viruses, defective interfering particles and prions. - Describe the regulation of viral genome expression and concepts/molecular mechanisms of transformation of cells by tumor viruses and therapeutic interventions and oncolytic viruses
19	VR-306	(a) Veterinary and agricultural Viruses and their management (OR)	2020	<ul style="list-style-type: none"> - Describe the origin, evolution, morphology and properties of viruses, cultivation, and transmission of viruses. - Understand the history, structure, transmission, epidemiology, detection and control of important animal viruses and concepts of veterinary epidemiology. - Learn about history, structure, transmission, epidemiology, detection, and control of major viruses infecting plants and humans. - Acquire knowledge about biological, physical, serological, and molecular methods used for detection of viruses and describe strategies followed for management of plant and animal viruses.
		(b) Emerging Infectious Virus		<ul style="list-style-type: none"> - Understand the evolution, general introduction to morphology, cultivation, and

		Diseases		<p>transmission of viruses.</p> <ul style="list-style-type: none"> - Describe the epidemiology and surveillance of emerging infectious and zoonotic viral diseases. - List and discuss the important vector-borne and non-vector-borne emerging virus diseases. - Learn about virus surveillance, surveys and strategies of prevention and control of emerging viruses and bioterrorism.
20	VR-401	Animal and Human Virology	2020	<p>Understand the virus host interactions, host defense mechanisms against viruses and innate and adaptive immune responses to viruses.</p> <p>Describe the various modes of vertical and horizontal transmission of animal and human viruses, zoonotic virus infections, routes of entry and mechanism of virus spread in the body.</p> <p>Learn about the epidemiological concepts of virus diseases, measures of disease occurrence, prevalence, and mapping, determinants of disease, factors affecting virus ecology and epidemiology and biological, serological, and molecular approaches used for detection of animal and human viruses.</p> <p>Acquire knowledge on virus disease surveillance, strategies of virus maintenance in communities, principles of virus disease survey, methods of prevention and control of animal and human viruses.</p> <p>-</p>
21	VR-402	Animal and Human Virus Diseases	2020	<ul style="list-style-type: none"> - Acquire the knowledge about etiology, transmission, clinical manifestations, diagnosis, prevention, and control of major RNA viruses of <i>Picornaviridae</i>, <i>Caliciviridae</i>, <i>Coronaviridae</i>, <i>Astroviridae</i>, <i>Matonaviridae</i>, <i>Togaviridae</i>, <i>Flaviridae</i>, <i>Reoviridae</i> and <i>Birnaviridae</i>. - Learn the etiology, transmission, clinical manifestations, diagnosis,

				<p>prevention, and control of important RNA viruses of <i>Orthomyxoviridae</i>, <i>Paramyxoviridae</i>, <i>Rhabdoviridae</i>, <i>Filoviridae</i>, <i>Bunyaviridae</i>, <i>Arenaviridae</i> and <i>Retroviridae</i>.</p> <ul style="list-style-type: none"> - Describe the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses of <i>Circoviridae</i>, <i>Parvoviridae</i>, <i>Poxviridae</i>, <i>Herpesviridae</i>, <i>Papillomaviridae</i> and <i>Adenoviridae</i>. - Develop the knowledge about etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses belonging to <i>Hepadnaviridae</i>, <i>Asfaviridae</i>, <i>Iridoviridae</i>, <i>Polydnaviridae</i> and <i>polyomaviridae</i> and understand the prion diseases, biology, prevention, and management of major viruses of silkworm, poultry, fish and prawn, emerging and reemerging virus diseases.
22	VR-403	Animal and Human Virology & Virus Diseases	2020	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity and ethical guidelines to be followed in the molecular virology laboratory. - Learn the technologies related to preparation of media for cell/tissue cultures, preparation of cell cultures/embryonated eggs for virus cultivation and isolation and quantitation of viruses using differential centrifugation and symptomatology/spectroscopy, respectively. - Develop skills to test the animal, human and plant viruses using serological and molecular tests and kit-based methods. - Acquire knowledge on virus-based nanotechnology protocols, virus epidemiology by doing extension activities and visiting field, poultry, agriculture research station and aqua farms.
23	VR-404	(a) Applied Virology (OR)	2020	<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of plant, animal and human viruses and to isolate and quantitate viruses.

				<ul style="list-style-type: none"> - Learn the methods to detect plant and animal viruses and able to analyze various types of results obtained from serological and molecular viral diagnostic methods. - Apply the skills acquired to prepare NPV as biopesticides and virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits. - .
		(b) Virus-based Biotechnology		<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of viruses and to isolate and quantitate viruses. - Learn the methods to detect plant and animal viruses and to analyze various types of results obtained from serological and molecular viral diagnostic methods. - Apply the skills acquired to prepare virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits. -
24	VR-405	(a) Applied Virology (OR)	2020	<ul style="list-style-type: none"> - Understand the basic concepts, types, requirements and methodologies of plant/animal cell and tissue cultures used for cultivation of plant and animal viruses. - Learn the production of recombinant DNA technology-based antibodies and vaccines to viruses and the concepts and methods of production of virus resistant/tolerant crops and virus-based biopesticides. - :Acquire knowledge about common virus infections caused to human beings through vector and non-vector borne modes and basic principles of biosafety, biosecurity, and ethical/regulatory issues in Virology and basics in Intellectual Property Rights (IPR). - Understand the utilization of viruses as viral genes/sequences as unique

				<p>genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology, phage display and therapy technologies and viruses as biological weapons.</p>
		(b) Virus-based Biotechnology		<p>Understand the basic concepts, types and methodologies of plant / animal cell and tissue cultures and exploitation of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology.</p> <p>Describe the exploitation of bacteriophages for peptide display and therapy, discuss the virus-based biopesticides and viruses as biological warfare, bio-crime and bioterrorism agents.</p> <p>Learn the concepts and methods of production of recombinant DNA technology-based antibodies and vaccines to viruses and understand the principles and applications of virus-based nanoparticles (virus nanoparticles and virus-like particles, VNPs and VLPs) in biotechnology.</p> <p>Describe the concepts and methods of production of virus resistant/tolerant crops and guidelines of testing and releasing the transgenic lines in India and learn about biosafety, biosecurity guidelines to be followed to conduct virus-related research and discuss the ethical and regulatory issues in virus-related research and basic concepts of IPR and Indian patenting system.</p> <p>-</p>
25	VR-406	(a) Human virus diseases (OR)	2020	<p>- Understand the clinical symptoms, prevention and treatment strategies of enteric viruses and different hepatitis viruses.</p> <p>- Understand the clinical symptoms, transmission, spread, laboratory diagnosis</p>

				<p>of viruses.</p> <ul style="list-style-type: none"> - Acquire knowledge about viruses associated with exanthematous diseases and viral hemorrhagic fevers. - Learn about epidemiology, structure and replication, laboratory diagnosis, prevention and therapeutic interventions of HIV and know about viral oncogenesis and oncogenic viruses.
		(b) Clinical Virology		<ul style="list-style-type: none"> - Acquire basic understanding of virus taxonomy and virus properties and learn the concept of transmission, replication, cultivation and characterization of viruses. - Learn to collect, preserve the virus samples and detect the viruses by using biological, serological and molecular methods, good microbiological and laboratory practices used in the clinical laboratories. - Understand the properties, transmission, pathogenesis, epidemiology, diagnosis and detection of clinically important virus diseases. - Learn about the approaches used for prevention and control of clinically important infectious virus diseases.

44. Zoology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ZOO-101	Invertebrata & Chordata	2019	i. Understanding the General Characteristics, Principles of classification, general biology of

				<p>Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respect to their habit and habitat.</p> <p>iii. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>
2	ZOO-102	Genetics & Evolution	2019	<p>i. Students will appreciate the concept of epigenetics as a key mechanism of regulation of gene expression steering development and cell fate that can ultimately be affected in disease condition</p> <p>ii. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	ZOO-103P	Practical-I Invertebrata & Chordata and Genetics	2019	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respect to their habit and</p>

				<p>habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	ZOO-104P	Practical-II Metabolic Regulation & Cell Function and Evolution	2019	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	ZOO-105	Metabolic Regulation & Cell Function	2019	<p>i. The students will learn about chemical bonding</p>

				<p>patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	ZOO-106	Human Values and Professional Ethics-I	2019	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2019	
7.	ZOO-201	Cell Biology & Immunology	2019	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will</p>

				<p>acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	ZOO-202	Molecular Biology	2019	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in</p>

				<p>cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	ZOO-203P	Practical-I Molecular Biology and Cell Biology	2019	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	ZOO-204P	Practical-II Comparative Animal Physiology and Immunology	2019	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to</p>

				<p>the fullet.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	ZOO-205	Comparative Animal Physiology	2019	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet</p> <p>.</p>
12	ZOO-206	Human Values and Professional Ethics-II	2019	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today</p>

				<p>life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	ZOO-301	Developmental Biology	2019	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	ZOO-302	Environmental Biology	2019	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling</p>

				<p>and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	ZOO-303P	Developmental Biology and Tools & Techniques	2019	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p>
16	ZOO-304P	Environmental Biology and Enzymology	2019	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education,</p>

				<p>Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	ZOO-305A	Tools & Techniques	2019	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	ZOO-305B	Enzymology	2019	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p>

				iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.
19	ZOO-305C	Bioinformatics & Biostatistics	2019	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	ZOO-306A	Economic Zoology	2019	i. Creating the self-employment opportunities to rural students through Animal husbandry,

				<p>Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	ZOO-306B	Structural Biology	2019	<p>i. Understand the evolution of protein structural motifs and domains and associate this with function;</p> <p>ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins.</p> <p>iii. Understand and explain enzyme mechanisms in a structural context.</p> <p>iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology.</p> <p>v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.</p>
22	ZOO-306C	Human Health and Infectious diseases	2019	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the</p>

				treatment methods to control the growth and control of microbes.
23	ZOO-401	Neurobiology	2019	<ul style="list-style-type: none"> i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials ii. Students learnt and gain knowledge on structure and function of different types of Synapses iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.
24	ZOO-402	Toxicology	2019	<ul style="list-style-type: none"> i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research. ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins. iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies. iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.
25	ZOO-403P	Neurobiology and Animal Biotechnology & Microbiology	2019	<ul style="list-style-type: none"> i. Learnt about structure, function and organization of Neurons in the Central nervous system ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials. iii. Identify microbiological techniques, the

				<p>defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effectively communicate with both specialist and non-specialist audiences/community.</p>
26	ZOO-404P	Toxicology and Animal Behavior & Wild life	2019	<p>i. Skill development in environmental and occupational Toxicology.</p> <p>ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii. Identification of different routes of exposure of environmental toxins.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
27	ZOO-405A	Animal Biotechnology & Microbiology	2019	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p>

				<ul style="list-style-type: none"> ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors. iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products. iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques. v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny vi. Classify the nutritional types of microorganisms and measure microbial growth vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.
28	ZOO-405B	Animal Behavior & Wild life	2019	<ul style="list-style-type: none"> i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates ii. Gained lot of information on different types of Learning phenomenon and their mechanisms. iii. To understand the how to conserve wild animals and management strategies. iv. To gain the knowledge about wild animals and animal products importance.
29	ZOO-405C	Endocrinology	2019	<ul style="list-style-type: none"> i. Understand the pathways associated with

				<p>Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
30	ZOO-406A	Genetic Engineering	2019	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
31	ZOO-406B	Environmental Impact Assessment & Green Auditing	2019	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
32	ZOO-406C	Medical Biotechnology, IPR, Biostatistics	2019	<p>i. Students will gain awareness about Intellectual</p>

		and Bioethics		<p>Property Rights (IPR) to take measures for protecting their ideas.</p> <p>ii. Gains knowledge on the Developmental stages of organism in Animal Biotechnology.</p> <p>iii. To understand and they will be able to devise business strategies by taking account of IPRs.</p> <p>iv. Students will develop awareness about bioethics and biosafety, Authorship and patenting / commercial rights and conflicts.</p>
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Animal Biotechnology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/Skill Development
1	ABT- Core-101	Metabolic Regulation & Cell Function (MRCF)	2019	<ul style="list-style-type: none"> • Knowledge on chemicals bonds, thermodynamics principles and metabolisms of Glycolysis, TCA Cycle and their biomedical importance will be gained. • Metabolic discords of urea cycle and importance of proteins structure and functions can be understood. • Biosynthesis of purine and pyrimidine nucleotide and Clinical disorders of purine and pyrimidine metabolism can be learnt • To become proficient in Biomedical importance of lipids and over view metabolism of

				carbohydrate, protein and lipids
2	ABT- Core-102	Tools & Techniques (TT)	2019	<ul style="list-style-type: none"> • Skills will be acquired on chromatography, centrifugation, electrophoresis and blotting techniques • To get knowledge on cell and tissue culture, cell types, culture media and overview of stem cell biology • To acquire skill on electrganetic spectrum, type of detectors, electophysiological methods and brain activity recording techniques • Microscopic techniques, different fixation and staining techniques, tissue processing for microtomy, cryotechiques will be learnt
3	ABT-Core-P-103	Metabolic Regulation & Cell Function	2019	<ul style="list-style-type: none"> • Practical knowledge will be gained on biochemical assays like estimation of proteins, structural proteins, soluble proteins, free amino acids, total carbohydrates and total cholesterol. • To gain knowledge in handling equipments like cooling centrifuge, autoclave, laminar air flow etc., and, maintenance of animal cell culture laboratory. <p>To learn microbial media preparation for their culture and identification</p>
4	ABT-Core-P-104	Tools & Techniques	2019	<ul style="list-style-type: none"> • Isolation of DNA from chick liver • Agarose gel electrophoresis • Estimation of DNA and RNA by diphenyl anime method and orcinal method • Paper chromatography • Platting procedures • Gram staining

				<ul style="list-style-type: none"> • Anti microbial susceptibilities test
5	ABT-CF-105	Microbiology and Diseases	2019	<ul style="list-style-type: none"> • Microorganisms classification and structure of prokaryotic and eukaryotic microorganism can be understood • To get knowledge on Nutritional requirements to microorganisms, growth of microorganism, control of microorganism and microbes of biotechnological importance • To become proficient in chemical nature of gene, plasmids incompatibility, horizontal transfer of genome among the microbial community and Benzer's classical studied on II locus • To learn diseases caused by microorganism
6	ABT -EF-106	Human Values & Professional Ethics (HVPE)-I	2019	<ul style="list-style-type: none"> • Knowledge will be gained on nature of ethics its relation to religion. Politics, Business • To understand nature of values Good and Bad, end and means, analysis of basic moral concepts, good behavior and respect for elders, character and conduct • Proficient on hagavad Githa • Crime and theories of punishment will be learnt
7	ABT- Core-201	Molecular Biology (MB)	2019	<ul style="list-style-type: none"> • To gain knowledge on DNA structure, genome of Nuclear and mitochondrial and maternal Inheritance • To understand replication in prokaryotes, Enzymology of DNA replication, Discontinuous replication and Bidirectional replication • Synthesis of RNA, Types of RNA, Genetic code and Ribosome structure will be understood <p>Knowledge will be gained regulation I and II and Operon concepts</p>

8	ABT- Core-202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2019	<ul style="list-style-type: none"> • To understand animal cell culture, biology of stemcells and embryonic stem cell • To learn propagation of embryonic stem cells, nuclear transfer technology, animal cloning and stem cell differentiation • To gain knowledge on stem cell plasticity, stem cell assay and protocols, stem cell separations and stem cell therapies <p>To learn stem cells and tissue engineering, human embryonic stem cells and society, intellectual property results</p>
9	ABT-Core-P-203	Molecular Biology & Immunology	2019	<ul style="list-style-type: none"> • Effect of UV radiation on bacterial growth • SDS PAGE • Electrophoresis • Blood grouping • Blood smear preparation • RBC count • Radial Immuno Diffusion • Neubauer chamber
10	ABT-Core-P-204	Animal Cell culture & Stem Cell Biology & Cell Biology	2019	<ul style="list-style-type: none"> • Laboratory safety rules and regulations • Animal handling and care • Preparation of cell culture media • Staining of animal cells • Preparation of cell lines • Culture of virus in chick embryo
11	ABT- CF-205	Cell Biology & Immunology (CB&IM)	2019	<ul style="list-style-type: none"> • Able to learn organization of prokaryotic and eukaryotic cell, Nucleus structure, Eukaryotic chromosome and polytene and lamp brush chromosomes

				<ul style="list-style-type: none"> • To learn mechanism of cell division, regulation of eukaryotic cell cycle, chromosomal abnormalities and tumor biology • To understand types of immunity, types of cell involved in immune response, structure and function of antibody and complementarily cascade • To gain knowledge on Antigen presentation, hypersensitivity reactions, immune tolerance and immunopathology
12	ABT- EF-206	Human Values & Professional Ethics (HVPE)-II	2019	<ul style="list-style-type: none"> • To gain knowledge on value education • To learn medical ethics • To become proficient on business ethics • To understand environmental ethics and social ethics
13	ABT- Core-301	Enzymology (ENZ)	2019	<ul style="list-style-type: none"> • To understand enzyme specificity, enzyme catalysis and isolation and purification of enzymes • To gain knowledge on theories of enzymes kinetics, enzyme kinetics and its importance, effect of reactant concentrations and effect of temperature of pH and enzyme concentration reaction rate • To become proficient on clinical aspects of enzymology, immobilized enzymes, isoenzymes and enzyme engineering
14	ABT- Core-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2019	<ul style="list-style-type: none"> • To become proficient on structure and function of male and female reproductive system; reproductive cycles and contraception in male and females • To gain skill on sex determination, selection for qualitative inherited characters, parental determination and verification and progeny testing • To understand artificial insemination techniques, in vitro fertilization, embryo transfer technology, microinjection and macroinjection

				<ul style="list-style-type: none"> To learn transgenic technology development, generation of chimeric, transgenic and knockout mice
15	ABT-Core-P-303	Enzymology & Genetic Engineering	2019	<ul style="list-style-type: none"> To determine the effect of substrate concentration, enzyme concentration and temperature on enzyme activity Measures of central tendency regression and correlation analysis T-test
16	ABT-Core-P-304	Animal Reproduction, Breeding & Transgenic Technology & Environmental Biotechnology	2019	<ul style="list-style-type: none"> To estimate the sperm motility, sperm count, sperm membrane integrity test and pH of semen. Determination sperm viability Retrieval of gene and protein sequence from gene and protein bank, redelivery
17	GE-305A	Cancer Biology	2019	<ul style="list-style-type: none"> To gain knowledge on cancer types and tumor development To learn oncogenes, mechanisms of onogene activation and chromosomal translocation To understand cell cycle regulation and cancer, DNA Damage and repair To learn tumor immunology, Vaccine development, tumor cell evasion of immune defenses
18	GE-305B	Animal Biotechnology & Industrial Applications	2019	<ul style="list-style-type: none"> To gain knowledge on preservation animals engineered bacteria/yeast/ cell lines, metabolic engineering, fermentative production and glycolytic pathway To understand monoclonal

				<p>antibodies production and genetically engineered products</p> <ul style="list-style-type: none"> To know the DBT guidelines, Global scenario of transgenic micro organisms and ethical issues related to biotechnology products
19	GE-305C	Biostatistics & Bioinformatics	2019	<ul style="list-style-type: none"> To understand prediction of protein structure and protein sequence database, prediction of gene structure, submission of sequence to database, phylogenetic analysis To learn biostatistics, measures of location and dispersion, curve fitting and correlation and regression To understand probability distribution, tests of significance, student t-test and F-test, chi square test and their application
20	OE-306A	Environmental Biotechnology (EBT)	2019	<ul style="list-style-type: none"> To gain knowledge on waste and pollutants, hazards from wastes and pollutants and hazards from chemicals in wastes Waste treatment, treatment of liquid wastes, treatment of solid waste and contributions of biotechnology to waste treatment will be understood To become proficient in aerobic waste water treatment and measurement of pollution levels To learn anaerobic treatment of waste water, biodegradation of xenobiotics compounds, hazards from xenobiotics and bioremediation
21	OE-306B	Genetic Engineering (GE)	2019	<ul style="list-style-type: none"> Use of enzymes in DNA and RNA synthesis, restriction enzymes and ligation and modification of DNA To learn vectors for constructions of genomic libraries, expression vectors, promoters

				<p>and vectors used for cloning</p> <ul style="list-style-type: none"> • To gain knowledge on DNA fragments, cDNA synthesis, PCR • To become proficient on ligation between cohesive and blunt end DNA fragments, introduction of cloned genes into host and expression of cloned genes
22	ABT-Core- 401	Medical Biotechnology (MBT)	2019	<ul style="list-style-type: none"> • To understand disease diagnosis, use of monoclonal antibodies in detection of genetic disease • To learn Disease treatment, interferons, growth factor, and antisense nucleotide as therapeutic agent • To gain knowledge on gene therapy, types of gene therapy, augmentation therapy and targeted transfer • To become proficient on forensic medicine, preparation of DNA sample. Approaches for DNA analysis and applications of forensic medicine
23	ABT-Core- 402	Fermentation Technology and Downstreaming Process (FTDSP)	2019	<ul style="list-style-type: none"> • To understand cell distribution methods, separation techniques, purification by chromatographic techniques and isolation and screening and maintenance of industrially importance microbes • To learn bioreactor design, fermentation economics, upstream processing, membrane based separations <p>To gain knowledge on importance of downstream processing economics of downstream processing</p>
24	ABT-Core-	Project and Viva- Voce	2019	<ul style="list-style-type: none"> • Students must perform project work which

	P-403& 404			<p>includes experiments related to Toxicology, Animal Tissue culture, Fermentation technology or any work related to biology.</p> <p>After completion of project work students have to prepare dissertation by their own and submit to the committee members.</p> <ul style="list-style-type: none"> • Evaluation of dissertation will be conducted by committee members through Viva-Voce
25	GE-405A	Biosafety, Bio Ethics & Intellectual Property rights	2019	<ul style="list-style-type: none"> • To understand socio-economic and legal impact of biotechnology, use of genetically modified organisms, moral and ethical issues in biotechnology and safety issues with GMO • To learn intellectual property right, evaluation of patenting, application of GATT and IPR and WTO Act and global and Indian biodiversity • To gain knowledge on Indian Patent Act 1970, role of country patent office, U.S. Patent trademark office and U.S. Paten system Vs Indian Patent system • To gain knowledge on Ethics and genetic engineering, patent of genes, human cloning, stem cell, regulatory requirements for drugs and biologics, GLP and GMP
26	GE-405B	Drug design and Development	2019	<ul style="list-style-type: none"> • To learn drug design, analog approach of drug designing • To understand SAR Vs QSAR, Partition coefficient, Hammets substituent constant and Tafts steric constant, Free Wilson mode, 3D-

				<p>QSAR approach like COMFA and COMIA</p> <ul style="list-style-type: none"> • To gain knowledge on pharmacological screening and assays, pharmacological screening models for therapeutic areas, cell based assay, biochemical assay, radiological binding assay, small molecule manufacturing • To learn Drug Laws, FDA, OECD, ICH, Schedule Y, drug registration, Regulations of human pharmaceuticals and biological products, and clinical trial design
27	GE-405C	Animal Cell Culture Techniques	2019	<ul style="list-style-type: none"> • To understand Animal cell culture, culture medium, characteristics of cell in culture, measurement of viability and cytotoxicity , cell types and apoptosis • To gain knowledge in scaling up of animal cell culture, cell transformation, tissue engineering, transgenic animals, animal cloning • To become proficient in improvement of biomass, pharming products, plasminogen activator and ethical issues related to biotechnology products
28	OE-406A	Advanced Genomics and Proteomics	2019	<ul style="list-style-type: none"> • To learn structure of Prokaryotic and Eukaryotic genomes, Isolation and purification of genomic DNA, Construction of Physical maps and Whole genome sequence alignment • To understand genome annotation, methods for gene identification, functional genomics, transcript profiling

				<ul style="list-style-type: none"> To learn protein structure, sample preparation and separation 2D-analysis, Multidimensional liquid chromatography, protein-protein interactions analysis <p>To gain knowledge on DNA /protein sequence homologies, Gene duplication and</p>
29	OE-406B	Bio resource Technology (Apiculture, Sericulture , Aquaculture, Vermiculture)	2019	<ul style="list-style-type: none"> To understand Types of honey bees, life history of honey bees, management of apiculture and by products of honey bees and economic importance disease and their control To become proficient on fresh water fin fish culture, shell fish (prawn and Pearls) culture To understand historical background of vermicompost, methods of vermiculture and problems involved in vermicompost

44. Business Management

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MBA 101	Management And Organisational Baehaviour	2020	<p>Examine the Management concepts and functions.</p> <p>Apply the concepts of planning, decision making.</p> <p>Apply the concepts of delegation of authority, decentralisation and departmentation in real life situations.</p> <p>Analyse the controlling principles and practices, Ethics and corporate social responsibility.</p>	

				Evaluate the basic concepts of organizational conflicts and climate.	
2	MBA 102	Managerial Communications	2020	Apply the basic concepts of communication for business correspondence. Distinguish different forms of communication. Evaluate different types of communication. Adapt report writing skills of different types on need basis. Acquire presentation skills along with the interview techniques.	
3	MBA 103	Managerial Economics	2020	Describe the importance of managerial economics and its contribution to decision making in different types of business organizations by the managerial economist. Apply the basic principles of managerial economics. Apply demand analysis concept in the real life business situations. Discuss the meaning and usefulness of the production function and cost function in analysing the firm's production activity.	
4	MBA 104	Accounting For Managers	2020	Outline the basic knowledge of accounting, bookkeeping, accounting Principles, accounting cycle. Apply the concepts of journal, ledger and Trail balance. Identify the nature of expenditure and revenue for preparation of financial statements of business. Examine the role of accounting policies like depreciation.	
5	MBA 105	Quantitative Analysis For	2020	Recall the fundamentals in Mathematics and	

		Management Decisions		<p>Statistics.</p> <p>Demonstrate the methods to solve derivatives, progressions and gaming.</p> <p>Choose decision making in a competitive situation.</p> <p>Solve transportation Problem with minimum cost of transport of commodities.</p>	
6	MBA 106	Information Technology For Managerial Applications	2020	<p>Identify various network topologies.</p> <p>Apply Various Mathematical & Statistical Operations Using MS office &MS-Excel.</p> <p>Create Effective basic power point Presentations</p>	
7	MBA 107	Business Statistics	2020	<p>About the information needs, sources of data and measures of central tendency .</p> <p>The concept of Scientific Research and the methods of conducting Scientific Enquiry.</p> <p>The Statistical Tools of Data Analysis.</p>	
8	MBA 108	Human Values And Professional Ethics	2020	<p>About ethics, values and morals.</p> <p>The concepts of value based education and its relevance.</p> <p>Learn about environmental and social ethics</p>	
9	MBA 201	Marketing Management	2020	<p>Outline the concepts of marketing.</p> <p>Create the segmentation, targeting and positioning in marketing.</p> <p>Analyse various phases of product life cycle.</p> <p>Evaluate various methods of pricing and identify the best pricing strategy.</p> <p>Evaluate marketing communication strategies.</p>	
10	MBA 202	Financial Management	2020	<p>Outline the basic concepts of Financial Management.</p> <p>Comprehend the various methods of Investment Analysis and apply various techniques of capital budgeting.</p>	

				<p>Adapt the concepts of leverage, capital structure and its effect on the long term survival of the firm.</p> <p>Appraise various methods of computation of cost of capital.</p>	
11	MBA 203	Human Resources Management	2020	<p>Outline the functions and challenges of HRM. Apply different concepts of HR Planning, Recruitment, Selection, Training, Interviewing Techniques and Executive Development Programs.</p> <p>:Apply the uses of job analysis, job description, job specification, ergonomics in industry and the methods of job evaluation.</p> <p>Utilize the various methods of performance appraisal.</p>	
12	MBA 204	Production Management	2020	<p>Apply the basic concepts of production and operations management and identify types of manufacturing processes.</p> <p>Define and explain concept of production planning and control.</p> <p>Identify effective plant location and plant layout.</p> <p>Design strategies to improve productivity.</p>	
13	MBA 205	Business Research Methods	2020	<p>Adapt the fundamentals of Business research methodology.</p> <p>Identify research problem.</p> <p>Apply sample and census survey and measuring techniques.</p> <p>Design data collection techniques.</p> <p>Develop data processing procedures and apply tools.</p> <p>Draft thesis/report writing.</p>	
14	MBA 206	Management Information	2020	Understand various types of information	

		Systems		systems. Analyse the various functional information systems	
15	MBA 207	Operation Research	2020	Understand various concepts and techniques of OR. Apply various OR techniques to improve the efficiency of the organisations.	
16	MBA 208	Leadership Values	2020	Identify the leadership qualities to run an organization successfully. Appraise the various concepts of value based leadership.	
17	MBA 301	Business Environment	2020	Outline the basic concepts of business environment and its components. Analyze the structure of Indian economy. Discuss the components of fiscal policy and balance of payments. Evaluate different trade related policies.	
19	MBA 302	Entrepreneurship	2020	Understand the concept of entrepreneurship. Analyse entrepreneurship development programs in India and contents for training for entrepreneurial competencies. Develop Creativity in entrepreneurship. Design the project reports & make project evaluation	
20	MBA 311	Consumer Behaviour	2020	Evaluate the consumer behaviour and business strategies. Apply the various consumer behaviour models. Build the psychological process and develop the effective strategy in terms of impact on consumer behaviour.	
21	MBA 312	Customer Relationship Management	2020	Develop the concepts of CRM and strategies in business. Appraise the customer profile and perception of	

				customer behavior in relationship perspectives. Analyse strategies for customer acquisition, models of CRM.	
22	MBA 313	Marketing Research And Information Systems	2020	Understand basic concepts of research and methodology of conducting researches in marketing domain. <ul style="list-style-type: none"> • Pursue the summer training/ project work and a winter project work and a professional career in Marketing Research domain. 	
23	MBA 314	Advertising And Sales Promotion Management	2020	Discuss the basic concepts of advertising for better understanding the challenges and opportunities in advertising . Analyse the relations of advertising with segmentation and budget decision . Design better advertising strategies for the company . Identify media options which are suitable for the company for better promotion . Develop an effective advertising campaign for the company .	
24	MBA 315	Product And Brand Management	2020	Discuss the importance of brand image in marketing . Formulate brand vision which communicates better the organisations' policy on Branding . Analyse brand promotion methods in brand communication . Analyse factors influencing brand extension decisions . Design brand marketing programmes and for better brand performance .	
25	MBA 316	Digital Marketing	2020	Get knowledge regarding basic concepts of Digital Marketing.	

				<p>Analyse and Choose different channels of digital marketing according to the changing requirements of the markets</p> <p>Construct different digital marketing plans on situational basis.</p> <p>Manage digital by conducting a marketing research and adapt the changes by creating new goals for further reputation.</p>	
26	MBA 321	Financial Services	2020	<p>Have awareness on insurance industry & its regulations.</p> <p>Create awareness on different financial services.</p>	
27	MBA 322	Investment Management	2020	<p>Analyse various investment alternatives for effective investment decision .</p> <p>Discuss the importance of security analysis in investment decision process .</p> <p>Design bond management strategies to realise good return on bond investment .</p> <p>Apply different equity valuation methods for the valuation of securities .</p> <p>Construct optimal portfolio for higher return at lower risk .</p> <p>Analyse different schemes of mutual funds for better investment decision .</p>	
28	MBA 323	Business Taxation	2020	<p>Conclude the fundamentals of Taxation .</p> <p>Discuss taxation methods of companies and individuals .</p> <p>Analyse income sources from business through taxation .</p> <p>Evaluate Tax management strategies</p>	
29	MBA 402	Strategic Management	2020	<p>Develop vision, mission and objectives of the organization.</p> <p>Analyse industry and develop techniques of competitive analysis.</p>	

				Appraise strategic leadership styles and actions. Formulate effective strategies in business. Develop a frame work for the implementation strategies in business. Evaluate the strategy controls by measuring performance of organization.	
30	MBA 403	Business Laws And Ethics	2020	Analyze the Indian Contract Act. Evaluate Sales of Goods Act and the machinery for redressal of consumer grievances. Elaborate rights and duties of agent and principal, Principal's liability for the acts of agent and the procedure for termination of agency. Examine the rights and duties of partners, dissolution of partnership firm.	

46. Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MCA 101	Discrete Mathematical Structures	2020	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it.

				<ol style="list-style-type: none"> 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution
2	MCA 102	Object Oriented Programming with Java	2020	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
3	MCA 103	Computer Organization	2020	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
4	MCA 104	Operating Systems	2020	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
5	MCA 105	105A.Accounting and Financial management 105B.Accounting Essentials for Computer Applications	2020	<ol style="list-style-type: none"> 1. Use of Accounting information to managers with in the organization. 2. Informs the business decision & control the Management Functions.
6.	MCA 106 P	Software Lab I (based on 101 & 103)	2020	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or

				<p>minimize some aspects of it.</p> <ol style="list-style-type: none"> 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution. 4. To gain knowledge about the Micro Processors. 5. To study the hierarchical memory system including cache memories and virtual memory
7.	MCA 107 P	Object Oriented Programming Lab	2020	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
8.	MCA 108P	Operating Systems Lab	2020	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
9.	MCA 201	Computer Oriented Operations Research	2020	<ol style="list-style-type: none"> 1. solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. analyse the general nonlinear programming problems.

				4. formulate the nonlinear programming models.
10.	MCA 202	Data Structures using Java	2020	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
11	MCA 203	Data Communication and Computer Networks	2020	<ol style="list-style-type: none"> 1. Understand the Network Terminologies and the components used to build networks. 2. Understand Network Models (Topologies) to establish networked systems. 3. Understand the internal architecture, working procedure of OSI Layer and Protocols.
12	MCA 204	Advanced Database Management Systems	2020	<ol style="list-style-type: none"> 1. Students will get an attempt to provide with the advanced information about ADBMS and their development. 2. This Subject also provides the conceptual background necessary to design and develop distributed database System for real life applications and also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms. 3. How SQL Programs are implemented as a series of primitive operations and how DDBs are implemented and how applications are design for those DDB
13	MCA 205	205A. E-Commerce	2020	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of

				<p>management information systems.</p> <ol style="list-style-type: none"> 2. Have the knowledge of the different types of management information systems. 3. Understand the processes of developing and implementing information systems and be aware of the ethical, social, and security issues of information systems;
14		205B. Cyber Security	2020	<ol style="list-style-type: none"> 1. Analyze and evaluate the cyber security needs of an organization and determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. 2. Measure the performance and troubleshoot cyber security systems and implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. 3. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators, Design and develop a security architecture for an organization and design operational and strategic cyber security strategies and policies.
15		205C. Neural Networks	2020	<ol style="list-style-type: none"> 1. Define what is Neural Network and model a Neuron and Express both Artificial Intelligence and Neural Network. 2. Analyze ANN learning, Error correction learning, Memory-based learning, Hebbian learning, Competitive learning and Boltzmann learning.

				<ol style="list-style-type: none"> 3. Implement Simple perception, Perception learning algorithm, Modified Perception learning algorithm, and Adaptive linear combiner, Continuous perception, learning in continuous perception.
16	MCA 301	Software Engineering	2020	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements. 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
17	MCA 302	Computer Graphics	2020	<ol style="list-style-type: none"> 1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics. 2. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis and Use of geometric transformations on graphics objects and their application in composite form. 3. Extract scene with different clipping

				<p>methods and its transformation to graphics display device, Explore projections and visible surface detection techniques for display of 3D scene on 2D screen and Render projected objects to naturalize the scene in 2D view and use of illumination models for this.</p>
18	MCA 303	Web Technologies	2020	<ol style="list-style-type: none"> 1. Explain the history of the internet and related internet concepts that are vital in understanding web development. 2. Discuss the insights of internet programming and implement complete application over the web and students can Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet. 3. Utilize the concepts of JavaScript and Java, Use web application development software tools i.e. Ajax, PHP and XML etc. and identify the environments currently available on the market to design web sites.
19	MCA 304	304A.Data warehousing and Data mining	2020	<ol style="list-style-type: none"> 1. To identify the scope and essentiality of Data Warehousing and Mining and to analyze data, choose relevant models and algorithms for respective applications. 2. To study spatial and web data mining. 3. Students develop research interest towards advances in data mining.
20		304B.Big Data Analytics	2020	<ol style="list-style-type: none"> 1. Understand the key issues in big data management and its associated applications in intelligent business and scientific

				<p>computing.</p> <ol style="list-style-type: none"> 2. Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. 3. Students Interpret business models and scientific computing paradigms, and apply software tools for big data analytics and achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications
21		304C System Programming	2020	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming.
22	MCA 305	305A. Cryptography and Network Security	2020	<ol style="list-style-type: none"> 1. Provide security of the data over the network and do research in the emerging areas of cryptography and network security. 2. Implement various networking protocols. 3. Protect any network from the threats in the world
23		305B.Artificial Intelligence	2020	<ol style="list-style-type: none"> 1. Demonstrate fundamental understanding

				<p>of the history of artificial intelligence (AI) and its foundations and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.</p> <ol style="list-style-type: none"> 2. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. 3. Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool, Demonstrate proficiency in applying scientific method to models of machine learning and Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.
24		305C.Mobile Application Development	2020	<ol style="list-style-type: none"> 1. Identify various concepts of mobile programming that make it unique from programming for other platforms, Critique mobile applications on their design pros and cons. 2. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 3. Program mobile applications for the Android operating system that use basic and advanced phone features, and deploy applications to the Android marketplace for distribution.
25	MCA 401	401A.Cloud Computing	2020	<ol style="list-style-type: none"> 1. Explain the core concepts of the cloud

				<p>computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.</p> <ol style="list-style-type: none"> 2. Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient. 3. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model. 4. Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
26		401B. Dot Net Technologies	2020	<ol style="list-style-type: none"> 1. To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. 2. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but webdistributed, or executed remotely. 3. Make the developer experience consistent across widely varying types of apps, such as Windowsbased apps and Web-based apps.

27		401C. Software Testing	2020	<ol style="list-style-type: none"> 1. List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects. 2. Distinguish characteristics of structural testing methods and demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. 3. Discuss about the functional and system testing methods and demonstrate various issues for object oriented testing.
28	MCA 402	402A. Essentials of Data Science	2020	<ol style="list-style-type: none"> 1. Having a clear understanding of the subject related concepts and contemporary issues. 2. Having problem-solving ability- to assess social issues and engineering problems. 3. Having a clear understanding of professional and ethical responsibility. 4. Having cross-cultural competency exhibited by working as a member or in teams. And having a good working knowledge of communicating in English – communication with the engineering community and society
29		402B.Deep Learning	2020	<ol style="list-style-type: none"> 1. Understand the role of deep learning in machine learning applications and get familiar with the use of TensorFlow/Keras in deep learning applications. 2. Compare Various deep learning Algorithms used for Classification Segmentation and detection.

				3. Apply various concepts related with Deep Learning to solve Problems. Analyse different deep learning models in Image related projects.
30		402C.Internet of Things	2020	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
31	MCA 403	Major Project Work	2020	

M.Sc (CS) : Master of Computer Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MSCS -101C	Computer Organization	2020	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
2	MSCS -102C	Programming in Java & Data Structures	2020	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
3	MSCS -103C	Operating Systems	2020	<ol style="list-style-type: none"> 1. Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC

				<p>abstractions, shared memory regions, etc.,.</p> <ol style="list-style-type: none"> Analyze important algorithms eg. Process scheduling and memory management algorithms. Categorize the operating system's resource management techniques, dead lock management techniques, memory management techniques. Demonstrate the ability to perform OS tasks in Red Hat Linux Enterprise.
4	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2020	<ol style="list-style-type: none"> Ability to apply mathematical logic to solve problems. Understand sets, relations, functions, and discrete structures. Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. Able to formulate problems and solve recurrence relations. Able to model and solve real-world problems using graphs and trees.
5	MSCS – 104 GE - B	Computer Oriented Operational Research	2020	<ol style="list-style-type: none"> Solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. Formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. Analyse the general nonlinear programming problems.

				4. Formulate the nonlinear programming models.
6	MSCS - 05CF	Environmental Studies	2020	<ol style="list-style-type: none"> 1. Articulate the interconnected and interdisciplinary nature of environmental studies. 2. Demonstrate an integrative approach to environmental issues with a focus on sustainability. 3. Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem solving. 4. Communicate complex environmental information to both technical and non-technical audiences. 5. Understand and evaluate the global scale of environmental problems and reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.
7	MSCS - 106EF	1. A. PC Hardware Basics	2020	<ol style="list-style-type: none"> 2. Identify the hardware components of a computer. Lists the hardware components such as processor, memory, disk, main board, etc. 3. Explains the features of the hardware components of a computer. Explains the relationships between the components of a computer and how data are transferred among the components. 4. identify the peripheral devices outside computer. Uses computer using input

				<p>devices, such as keyboard and mouse.</p> <ol style="list-style-type: none"> 5. Transfers data outside the computer using output devices, such as screen and printer. Saves files to removable devices and loads files from removable devices. 6. Connects to the Internet using network cards. identify the software's running on a computer. Identifies BIOS and changes settings in BIOS.
8	MSCS - 106EF	B. Statistical Methods	2020	<ol style="list-style-type: none"> 1. Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data. 2. Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient. 3. Know the association between the attributes. Know the construction of point and interval estimators. 4. Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation.
9	MSCS -201C	Advanced Data Base Management System	2020	<ol style="list-style-type: none"> 1. Explain and evaluate the fundamental theories for advanced database architectures and query operators. 2. Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database. 3. Assess and apply database functions of distributed database. Evaluate different

				<p>database designs and architecture.</p> <ol style="list-style-type: none"> Administer and analyze database with query optimization techniques and develop Web interface with database. Understand advanced querying and decision support system.
10	MSCS -202C	Computer Networks	2020	<ol style="list-style-type: none"> Describe the general principles of data communication. Describe how computer networks are organized with the concept of layered approach. Describe how signals are used to transfer data between nodes. Implement a simple LAN with hubs, bridges and switches. Describe how packets in the Internet are delivered. Analyze the contents in a given data link layer packet, based on the layer concept. Design logical sub-address blocks with a given address block. Decide routing entries given a simple example of network topology. Describe what classless addressing scheme and how routing protocols work.
11	MSCS -203C	Computer Graphics	2020	<ol style="list-style-type: none"> The course introduces the basic concepts of computer graphics. It provides the necessary theoretical background and demonstrates the application of computer science to graphics. The course further allows students to develop programming skills in computer graphics through programming assignments. Understands the core concepts and mathematical foundations of computer

				<p>graphics knows fundamental computer graphics algorithms and data structures.</p> <ol style="list-style-type: none"> Has an overview of different modeling approaches and methods and has detailed knowledge about basic shading and texture mapping techniques. Understands light interaction with 3D scenes.
12	MSCS- 204 GE – A	E- Commerce	2020	<ol style="list-style-type: none"> Understand the basic concepts and technologies used in the field of management information systems. Have the knowledge of the different types of management information systems. Understand the processes of developing and implementing information systems. Be aware of the ethical, social, and security issues of information systems;
13	MSCS- 204 GE B	Accounting And Financial Management	2020	<ol style="list-style-type: none"> Use of Accounting information to managers within the organization. Informs the business decision & control the Management Functions.
14	MSCS- 205CF	Human Rights And Value Education	2020	<ol style="list-style-type: none"> understand the historical growth of the idea of human rights. demonstrate an awareness of the international context of human rights. demonstrate an awareness of the position of human rights in the UK prior to 1998. understand the importance of the Human Rights Act 1998, analyse and evaluate concepts and ideas.
15	MSCS- 206 EF A	Principles Of Management	2020	<ol style="list-style-type: none"> Understand the concepts related to Business. Demonstrate the roles, skills and

				<p>functions of management.</p> <ol style="list-style-type: none"> Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.
16	MSCS- 206 EF B	Internet Of Things	2020	<ol style="list-style-type: none"> Able to understand the application areas of IOT. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. Able to understand building blocks of Internet of Things and characteristics.
17	MSCS-301C	Data Warehousing and Data Mining	2020	<ol style="list-style-type: none"> Understand the functionality of the various data mining and data warehousing component. Appreciate the strengths and limitations of various data mining and data warehousing models. Explain the analyzing techniques of various data. Describe different methodologies used in data mining and data ware housing. Compare different approaches of data ware housing and data mining with various technologies.
18	MSCS-302C	Web Technologies	2020	<ol style="list-style-type: none"> Analyze a web page and identify its elements and attributes. Create web pages using XHTML and Cascading Style Sheets.

				<ul style="list-style-type: none"> 3. Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas. 4. Build interactive web applications using AJAX.
19	MSCS-303C	Software Engineering	2020	<ul style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements. 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
20	MSCS -304-GE-A	Systems Programming	2020	<ul style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for

				<p>investigating solutions to real life applications with assembly language programming and Unix shell programming.</p> <ol style="list-style-type: none"> 4. Ability to devise, select, and use modern techniques and tools needed for the design and implementation of system programs.
21	MSCS -304-GE-B	Computer Algorithms	2020	<ol style="list-style-type: none"> 1. Apply design principles and concepts to algorithm design (c) 2. Have the mathematical foundation in analysis of algorithms (a, j) 3. Understand different algorithmic design strategies (j) 4. Analyze the efficiency of algorithms using time and space complexity theory (b)
22	MSCS -304-GE-C	UID Using .Net Technologies	2020	<ol style="list-style-type: none"> 1. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed, or executed remotely. 2. Build all communication on industry standards to ensure that code based on .NET Framework integrates with any other code. 3. Building multi-tier enterprise applications. 4. Client-side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.
23	MSCS -304-GE-D	IT in Forensic Science	2020	<ol style="list-style-type: none"> 1. Approach analysis of evidence without bias. 2. Develop a conceptual understanding of

				<p>criminal justice system, rules of evidence, legal system.</p> <ol style="list-style-type: none"> develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation and scientific laboratory procedures can be applied to immediate employment or advanced study.
24	MSCS -304-GE-E	Software Testing	2020	<ol style="list-style-type: none"> Various test processes and continuous quality improvement, Types of errors and fault models. Methods of test generation from requirements. Behavior modeling using UML: Finite state machines (FSM), Test generation from FSM models, Input space modeling using combinatorial designs. Combinatorial test generation, Test adequacy assessment using: control flow, data flow, and program mutations, The use of various test tools. Application of software testing techniques in commercial environments.
25	MSCS -305 GE-A	Cloud Computing	2020	<ol style="list-style-type: none"> Understand the concepts, characteristics, delivery models and benefits of cloud computing Understand the key security and compliance challenges of cloud computing Understand the key technical and organisational challenges Understand the different characteristics of

				public, private and hybrid cloud deployment models.
26	MSCS -305 GE-B	Big Data Analytics	2020	<ol style="list-style-type: none"> 1. Understand Big Data and its analytics in the real world, Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. 2. Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm, Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to generate analytics. 3. Implement Big Data Activities using Hive.
27	MSCS -305 GE-C	Artificial Neural Networks	2020	<ol style="list-style-type: none"> 1. Know the main provisions neuro mathematics, Know the main types of neural networks; 2. Know and apply the methods of training neural networks; 3. Know the application of artificial neural networks; 4. To be able to formalize the problem, to solve it by using a neural network.
28	MSCS -305 GE-D	Cyber Security	2020	<ol style="list-style-type: none"> 1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure. 2. Design, develop, test and evaluate secure software. 3. Develop policies and procedures to manage enterprise security risks. 4. Evaluate and communicate the human role in security systems with an emphasis

				on ethics, social engineering vulnerabilities and training. 5. Interpret and forensically investigate security incidents.
29	MSCS -305 GE-E	Mobile App Development	2020	1. Describe those aspects of mobile programming that make it unique from programming for other platforms, 2. Critique mobile applications on their design pros and cons, 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic and advanced phone features, and 5. Deploy applications to the Android marketplace for distribution.

47. Commerce

M.Com (R)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2020	<ul style="list-style-type: none"> i. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation ii. Impart the ability to find out the cash flows and provide the skills to value goodwill iii. Create awareness about IFRS and segment reporting

2	102.	Financial Management	2020	<ul style="list-style-type: none"> i. Describe meaning, functions and objectives; role of financial manager. ii. Examine investment decision, capital budgeting, techniques of CB and methods of CB. iii. Investigate management of working capital, needs and concepts. iv. Asses financing decision, capital structure and capital theories. v. Design dividend decision and theories of dividend.
3	103.	Business Environment and Policy	2020	<ul style="list-style-type: none"> i. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment. ii. Illustrates economic environment nature and scope and new economic policy. iii. Develop political, legal environment; reasons for state intervention and government business interface. iv. Study the socio cultural environment nature, impact of social responsibility and business ethics. v. Interpret global environment; benefits and problems of MNCs and WTO.
4	104.	Organisational Behaviour	2020	<ul style="list-style-type: none"> i. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation ii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts. iii. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.
5	105a	Quantitative Techniques for Business Decisions	2020	<ul style="list-style-type: none"> i. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions. ii. Formulate F distribution and multiple co-relations co-efficient and study

				<p>probability and non-probability distributions.</p> <p>iii. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost Accounting	2020	<p>i. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>ii. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>iii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>iv. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2020	<p>i. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>ii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.</p> <p>iii. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2020	<p>i. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>ii. Explain Strategic financial management success factors and constraints.</p> <p>iii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>iv. Identify financial distress and restructuring; countering financial distress.</p>

				<p>v. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2020	<p>i. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>ii. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>iii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>iv. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2020	<p>i. To impart basic knowledge on working capital concepts and source of WCand to provide the skills to estimate working capital</p> <p>ii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>iii. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2020	<p>i. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercials banks in India.</p> <p>ii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits o e-banking applications.</p> <p>iii. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2020	<p>i. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>ii. Illustrate portfolio theory, CAPM, SMLand APT models and investigate portfolio evaluation; sharpe's, treynor's and Jensen's performance index.</p>

				<ul style="list-style-type: none"> iii. Synthesize portfolio revision, need and strategies.
14	302.	Accounting for Managerial Decisions	2020	<ul style="list-style-type: none"> i. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing. ii. Study the concept of Responsibility Accounting and its uses and trends. iii. Know the essential parameters for evaluation of divisional performance and the emerging issues today iv. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.
15	303a .	Tally with GST Application	2020	<ul style="list-style-type: none"> i. To acquaint oneself with skills to prepare financial statements through Tally ERP. ii. To understand basics of GST system and to know steps involved in generating GSTR reports. iii. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.
16	303c .	Tax planning & Management	2020	<ul style="list-style-type: none"> i. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads ii. Acquire the knowledge on tax planning with regard to location iii. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.
18	305a	Fundamentals of Accounting	2020	<ul style="list-style-type: none"> i. To provide basic knowledge on accounting and its preparation and enable

				<p>the students to prepare final accounts</p> <ul style="list-style-type: none"> ii. To help the students to acquire the skills of financial statement analysis iii. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.
19	401	Financial Derivatives	2020	<ul style="list-style-type: none"> i. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions. ii. Prioritise options in financial derivatives and option pricing models. iii. Compose swap market futures, types and interest rate; pricing swaps. iv. Synthesize stock index futures, options and trading of stock futures and options.
20	402.	Project Planning & Control	2020	<ul style="list-style-type: none"> i. Define a project and operations of corporate long range planning and phases of capital budgeting. ii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting. iii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project. iv. Understand Social cost benefit analysis and methods of SCBA v. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.
21	403a	Insurance Management	2020	<ul style="list-style-type: none"> i. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector. ii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance. iii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon. iv. Seek awareness on miscellaneous insurance including health, personal

				<p>accident crop insurance and practical problems in implementation and claim settlement.</p> <p>v. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2020	<p>i. Learn the basic concepts of Indian securities market.</p> <p>ii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>iii. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>

M.Com (A&F)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2020	<p>iv. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>v. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>vi. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2020	<p>vi. Describe meaning, functions and objectives; role of financial manager.</p> <p>vii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>viii. Investigate management of working capital, needs and concepts.</p> <p>ix. Asses financing decision, capital structure and capital theories.</p>

				<p>x. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2020	<p>vi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>vii. Illustrates economic environment nature and scope and new economic policy.</p> <p>viii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>ix. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>x. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2020	<p>iv. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>v. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>vi. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2020	<p>iv. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>v. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>vi. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>

7	201	Advanced cost Accounting	2020	<ul style="list-style-type: none"> v. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; vi. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. vii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. viii. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2020	<ul style="list-style-type: none"> iv. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. v. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. vi. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic Financial Management	2020	<ul style="list-style-type: none"> vi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, vii. Explain Strategic financial management success factors and constraints. viii. Illustrate corporate valuation approaches and guidelines; value based management. ix. Identify financial distress and restructuring; countering financial distress. x. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2020	<ul style="list-style-type: none"> v. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. vi. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.

				<p>vii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>viii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2020	<p>iv. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>v. To enable the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>vi. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2020	<p>iv. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>v. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>vi. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2020	<p>iv. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>v. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>vi. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2020	<p>v. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>vi. Study the concept of Responsibility Accounting and its uses and trends.</p>

				<p>vii. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>viii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2020	<p>iv. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>v. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>vi. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2020	<p>iv. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>v. Acquire the knowledge on tax planning with regard to location</p> <p>vi. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2020	<p>iv. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>v. To help the students to acquire the skills of financial statement analysis</p> <p>vi. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2020	<p>v. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>vi. Prioritise options in financial derivatives and option pricing models.</p>

				<p>vii. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>viii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2020	<p>vi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>vii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>viii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>ix. Understand Social cost benefit analysis and methods of SCBA</p> <p>x. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a	Insurance Management	2020	<p>vi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>vii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>viii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>ix. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>x. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2020	<p>iv. Learn the basic concepts of Indian securities market.</p> <p>v. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>vi. Investigate into Indian stock exchanges and Illustrate about stock market with</p>

				special reference to BSE sensex and NSE indices.
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M.Com (FM)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2020	<p>vii. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>viii. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>ix. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2020	<p>xi. Describe meaning, functions and objectives; role of financial manager.</p> <p>xii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>xiii. Investigate management of working capital, needs and concepts.</p> <p>xiv. Asses financing decision, capital structure and capital theories.</p> <p>xv. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2020	<p>xi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>xii. Illustrates economic environment nature and scope and new economic policy.</p> <p>xiii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>xiv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>xv. Interpret global environment; benefits and problems of MNCs and WTO.</p>

4	104.	Organisational Behaviour	2020	<p>vii. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>viii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpernual conflicts.</p> <p>ix. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2020	<p>vii. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>viii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>ix. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
7	201	Advanced cost Accounting	2020	<p>ix. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>x. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>xi. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p> <p>xii. Perceive the significance of ABC in cost ascertainment and control.</p>
8	202.	Financial Markets and Services	2020	<p>vii. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>viii. Demonstrate the role of merchant bankers and to analyze the metrics</p>

				<p>involved in credit rating the financial instruments issued by companies in primary market.</p> <p>ix. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2020	<p>xi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>xii. Explain Strategic financial management success factors and constraints.</p> <p>xiii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>xiv. Identify financial distress and restructuring; countering financial distress.</p> <p>xv. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2020	<p>ix. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>x. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>xi. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>xii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2020	<p>vii. To impart basic knowledge on working capital concepts and source of WCand to provide the skills to estimate working capital</p> <p>viii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>ix. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking	2020	<p>vii. To understand the RBI's financial norms to be followed by commercial banks</p>

		Operations		<p>and to investigate into the roles of various commercial banks in India.</p> <p>viii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>ix. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2020	<p>vii. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>viii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>ix. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2020	<p>ix. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>x. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>xi. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>xii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>
15	303a	Tally with GST Application	2020	<p>vii. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>viii. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>ix. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>

16	303c	Tax planning & Management	2020	<p>vii. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>viii. Acquire the knowledge on tax planning with regard to location</p> <p>ix. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
18	305a	Fundamentals of Accounting	2020	<p>vii. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>viii. To help the students to acquire the skills of financial statement analysis</p> <p>ix. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2020	<p>ix. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>x. Prioritise options in financial derivatives and option pricing models.</p> <p>xi. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>xii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2020	<p>xi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>xii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>xiii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>xiv. Understand Social cost benefit analysis and methods of SCBA</p> <p>xv. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a	Insurance Management	2020	<p>xi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>xii. Acquire knowledge on various types of life insurance policies and the</p>

				<p>terminology relating to the concept of insurance.</p> <p>xiii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>xiv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>xv. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
23	405a	Security Market Operations	2020	<p>vii. Learn the basic concepts of Indian securities market.</p> <p>viii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>ix. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>

48. B.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BP101T	Human Anatomy and Physiology I– Theory	2020	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the structure and functions of the various systems of the human body. 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy.

				4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition
2	BP102T	Pharmaceutical Analysis I–Theory	2020	<ol style="list-style-type: none"> 1. It gives knowledge about the fundamental methodology to prepare different strength of solutions. 2. It facilitate the students to predict the sources of mistakes and errors. 3. It also helps to develop the fundamentals of volumetric analytical skills. 4. It provides the basic knowledge in the principles of electrochemical analytical techniques The student will be provided with the skills to improve by the course content in terms of analytical techniques to perform the estimation of different category drugs.
3	BP104T	Pharmaceutical Inorganic Chemistry– Theory	2020	<ol style="list-style-type: none"> 1.To understand the history and concept of pharmacopoeia and its editions. 2. Knowledge about the sources of impurities and methods to determine the impurities in inorganic pharmaceuticals. 3. Identification of limit tests of different pharmaceutical inorganic compounds. 4. To understand the method to prepare inorganic

				<p>pharmaceuticals.</p> <p>5. To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.</p> <p>6. To discuss the handling and applications of radiopharmaceuticals</p>
4	BP105T	Communication skills– Theory	2020	<ol style="list-style-type: none"> 1. To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation. 2. To help students overcome stage fear and take questions. 3. To enable the students to become global citizens. 4. This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers. 5. At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and

				addvalue to the pharmaceutical business.
5	BP106RBT	REMEDIAL BIOLOGY–Theory	2020	<ol style="list-style-type: none"> 1.know the kingdoms of life. 2.know the body fluids, absorption, digestion, respiration. 3.know the excretory products, neural control, chemical coordination, and human reproduction. 4.know the Nutrition in plants and photosynthesis. 5.know the respiration in plants, cell, and tissues.
6.	BP106RMT	Remedial Mathematics– Theory	2020	<ol style="list-style-type: none"> 1. This program shall create an awareness about the mathematical problems, to develop an statistical evaluation. 2. To adopt skills in identifying and solving problems. 3. Know the theory and their application in Pharmacy research 4. Solve the different types of problems by applying theory in drug discovery
7.	BP107P	Human Anatomy and Physiology – Practical	2020	<ol style="list-style-type: none"> 1. Differentiate the structures of the various systems of the human body. 2. Perform the experiments like blood cell count, hemoglobin content, bleeding and clotting time and various physiological Parameters theoretically and practically. 3. Identify the structural (microscopically and

				macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system
8.	BP108P	Pharmaceutical Analysis I – Practical	2020	<ol style="list-style-type: none"> 1. This course is designed to perform and get trained to the electro chemical tests like potentiometry, complexometry, polarimetry. 2. Hands on training on different titrations like complexometric titrations, precipitation titrations, redox titrations. 3. Under stand the process of limit test and procedures. 4. Gain knowledge on the determination of Normality, Molarity, Molality. 5. Under stand the process how to Prepare the solution and its standardization
9.	BP109P	Pharmaceutics I – Practical	2020	<ol style="list-style-type: none"> 1. This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts of preparing the different conventional dosage forms. 2. To understand the different pharmaceutical calculation involved in formulation; 3. Practical knowledge on formulation procedure of different dosage forms; 4. Highlights the Practical allowance to formulate different types of dosage forms;and <p>Gain Knowledge on criteria to appreciate the good formulation for effectiveness</p>
10.	BP110P	Pharmaceutical Inorganic Chemistry– Practical	2020	<ol style="list-style-type: none"> 1. To recall the sources of limit tests, preparation and identification of compounds. 2. To demonstrate the preparation of inorganic

				<p>pharmaceuticals</p> <p>3. To apply knowledge to perform modified limit tests.</p> <p>4. To analyze various inorganic pharmaceutical compounds.</p> <p>5. To select suitable method for the preparation of inorganic pharmaceuticals.</p> <p>6.To assess quality of inorganic pharmaceuticals.</p>
11	BP111P	Communication skills– Practical	2020	<p>1.To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation.</p> <p>2.To help students overcome stage fear and take questions.</p> <p>3.To enable the students to become global citizens.</p> <p>4.This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers.</p> <p>5.At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and add value to the</p>

				pharmaceutical business.
12	BP112RBP	Remedial biology – Practical	2020	<ol style="list-style-type: none"> 1. How to use microscope, section cutting, mounting, staining, and permanent slide preparation. 2. About the cell and its functions. 3. About the frog with respect to human. 4. About the bone and tissues in humans and plants. 5. About the blood groups, blood pressure and tidal volume
13	BP 201T	Human Anatomy and Physiology-II – Theory	2020	<ol style="list-style-type: none"> 1. Know the gross morphology, structure and functions of various organs of the human body. 2. Perform all the hematological tests with the help of specimens 3. Note all the points regarding the tissues various organs of human body 4. Brief knowledge on clinical significance of various systems in our body. 5. Application of the role of genetics in day to day life.
14	BP202T	Pharmaceutical Organic Chemistry I – Theory	2020	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers.

				<ol style="list-style-type: none"> 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic reactions by analyzing their fair reaction mechanisms.
15	BP203T	Biochemistry – Theory	2020	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the biochemical Pathways of the body 2. understanding the catalytic role of enzymes, importance of enzyme inhibitors 3. Understand the genetic organization of mammalian genome 4. Understand the DNA in the synthesis of RNAs and proteins
16	BP 204T	PATHOPHYSIOLOGYI–Theory	2020	<ol style="list-style-type: none"> 1. Identifies Name the signs, symptoms and complications of the diseases. 2. Students Get thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological

				<p>mechanisms.</p> <ol style="list-style-type: none"> 3. To Study the aetiology and pathogenesis of the selected disease states 4. The baseline knowledge required to practice medicine safely, confidently, rationally and effectively.
17	BP205T	Computer Applications in Pharmacy – Theory	2020	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
18	BP206T	Environmental Science– Theory	2020	<ol style="list-style-type: none"> 1. This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment. 2 To compare the natural, renewable and non-renewable resources and the problems associated with them. 3 To motivate the learners to participate in environment protection and improvement. 4 To analyze the concepts of eco system including structure and functions. 5 To adopt skills in identifying and solving environmental problems.

				6 To develop an attitude of concern for the environment.
19	BP207P	Human Anatomy And Physiology II – (Practical)	2020	<p>This subject is to inculcate the students about the structure and functioning of various systems and to perform hematological tests, body temperature and BMI.</p> <ol style="list-style-type: none"> 1. Prepare the charts and tables for easy understanding of various systems and positive & negative feed back mechanism. 2. Awareness on family planning devices and pregnancy diagnosis test. 3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system
20	BP208P	Pharmaceutical Organic Chemistry I - Practical	2020	<ol style="list-style-type: none"> 1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes. 2. Get hands- on- experience in basic techniques of organic synthesis.
21	BP209P	Biochemistry – Practical	2020	1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch), Proteins (albumin and

				<p>Casein)</p> <ol style="list-style-type: none"> Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method) Qualitative analysis of urine for abnormal constituents Determination of blood creatinine, blood sugar, serum total cholesterol
22	BP210P	Computer Applications in Pharmacy – Practical	2020	<ol style="list-style-type: none"> know the various types of application of computers in pharmacy profession know the various types of databases used in profession know the usage of softwares in pharmacy
23	BP 301 T	Pharmaceutical organic chemistry II (Theory)	2020	<ol style="list-style-type: none"> Guess and writethestructure according to the stereochemical specifications. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. Assess and understand the pharmaceutical applications and importance of the specified named reactions
24	BP 302 T	Physical Pharmaceutics I (Theory)	2020	<p>The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms</p>
25	BP 303 T	Pharmaceutical Microbiology (Theory)	2020	<ol style="list-style-type: none"> To acquire knowledge on HVAC systems, layout designs, GMP standards sanitation personal hygiene in sterile product

				<p>manufacturing facilities.</p> <ol style="list-style-type: none"> 2. To know the various types of sterile products with their formulation in large scale industries. 3. To develop skill for lab scale manufacture of few SVPs, LVPs, ophthalmic products with labelling and quality control.
26	BP 304 T	Pharmaceutical Engineering (Theory)	2020	<ol style="list-style-type: none"> 1. To know various unit operations involved in manufacturing of pharmaceuticals. 2. To understand the concepts of flow of fluids, size reduction and size separation. 3 To perform different mechanisms of heat transfer. 4 To compare and contrast different types of evaporation and distillation process. 5 To determine the factors influencing mixing, filtration and centrifugation. 6 To elaborate various preventive methods used for corrosion control in pharmaceutical industries
27	BP 305 P	Pharmaceutical organic chemistry II (Practical)	2020	<ol style="list-style-type: none"> 1. Assess the identity in terms of the physico-chemical properties of the compounds of

				<p>specified chemical classes.</p> <p>2. Get hands-on experience in basic techniques of organic synthesis</p>
28	BP 306 P	Physical Pharmaceutics I (Practical)	2020	<p>This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods</p>
29	BP 307 P	Pharmaceutical Microbiology (Practical)	2020	<ol style="list-style-type: none"> 1. Learners gain knowledge on some sterile marketed products along with blood products which are not possible in laboratory and large scale manufacture. 2. To know the skills of aseptic techniques principles of sterilization and validation of aseptic areas. 3. Knowledge on blood products and surgical dressing with their formulation details, production and quality control.
30	BP 308 P	Pharmaceutical Engineering (Practical)	2020	<ol style="list-style-type: none"> 1. To understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying. 2. To demonstrate and explain about the construction, working and applications of pharmaceutical equipment's such as colloid mill, planetary mixer, fluidized bed dryer and

				<p>freeze dryer.</p> <ol style="list-style-type: none"> To experiment with the process variables of filtration, evaporation and infer the same. To determine radiation constant of brass, iron, unpainted and painted glass. To determine overall heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation. To estimate moisture content, loss on drying and construct drying curves for calcium carbonate and starch
31	BP 401 T	Pharmaceutical organic chemistry III (Theory)	2020	<ol style="list-style-type: none"> Guess and writethestructure according to the stereochemical specifications. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. Assess and understand the pharmaceutical applications and importance of the specified named reactions.
32	BP 402 T	Medicinal chemistry I (Theory)	2020	<ol style="list-style-type: none"> Fundamental knowledge on the structure, chemistry and therapeutic value of drugs. Understand the Structural Activity Relationship (SAR) of drugs. Importance of physicochemical properties and metabolism of drugs. Chemical synthesis of important drugs under each class.

33	BP 403 T	Physical Pharmaceutics II (Theory)	2020	<ol style="list-style-type: none"> 1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. 2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms
34	BP 404 T	Pharmacology I (Theory)	2020	<ol style="list-style-type: none"> 1. The subject is to impart knowledge about the action of the drug, different routes of drug administration, toxic effects etc. 2. Students would have understood the pharmacological actions of different categories of drugs. 3. Mechanism of drug action at organ system, sub cellular and macromolecular levels have been studied. 4. They have understood the application of basic pharmacological knowledge in the prevention and treatment of different diseases. 5. Signal transduction mechanism of various receptors have been understood
35	BP 405 T	PharmacognosyAndPhytochemistry I (Theory)	2020	<p>This subject is intended to impart students about the fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p> <ol style="list-style-type: none"> 1. Significance of pharmacognostic parameters & study of crude drugs.

				<ol style="list-style-type: none"> 2. Understand the underlying reason of evolutionary significance of secondary metabolites production in plants & other organisms & deduce their significance as medicinal molecules. 3. How these primary metabolites are used comprehensively as a source to develop Pharmaceutical & industrial applications. Study about the source, name, chemical structures, methods of extraction, qualitative & quantitative analysis of glycosides & tannin.
36	BP 406 P	Medicinal chemistry I (Practical)	2020	<p>This subject is to inculcate the students will able to know</p> <ol style="list-style-type: none"> 1. Basic knowledge on scope of Medicinal chemistry and interlinked subjects 2. Handling the glassware and Preparations of the synthetic drugs and how to calibrate the chemicals. 3. Perform the synthesis of the drugs with their chemical structures. 4. Compare the test drug with that of the standard drug by assay methods. 5. Understand the partition coefficient of any two drugs.
37	BP 407 P	Physical pharmaceutics II (Practical)	2020	<p>This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level</p>

				of methods
38	BP 408 P	Pharmacology I (Practical)	2020	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. Demonstration of different simulation methods
39	BP 409 P	Pharmacognosy and Phytochemistry (Practical)	2020	<ol style="list-style-type: none"> 1. Demonstrate chemical tests to identify unorganized crude drugs 2. Evaluate the quality and purity of crude drugs 3. Perform linear measurements for crude drug identification
40	BP501T	MEDICINAL CHEMISTRY – II- Theory	2020	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activityrelationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.
41	BP502T.	Industrial Pharmacy-I- Theory	2020	Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product
41	BP503T.	PHARMACOLOGY-II- Theory	2020	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical

				uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.
42	BP504T.	PHARMACOGNOSY AND PHYTOCHEMISTRY II- Theory	2020	The main purpose of subject is to impart the students the knowledge of how these secondary metabolites is produced in the crude drugs, how to isolate and identify and produce them industrially. Also, this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine
43	BP505T	PHARMACEUTICAL JURISPRUDENCE- Theory	2020	This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.
44	BP506P.	Industrial Pharmacy-I- Practical	2020	This is help to understand the basic information of formulation process and how to optimise quality control solid, semisolid and parenteral dosage forms
45	BP507P	PHARMACOLOGY-II- Practical	2020	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc. 3. Evaluate the different activities on animals. 4. Demonstration of different simulation methods. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments.
46	BP508P.	PHARMACOGNOSY AND PHYTOCHEMISTRY II - Practical	2020	To know the modern extraction techniques, characterization and identification of the herbal drugs

				and phytoconstituents by use chromatographic technique
47	BP601T.	MEDICINAL CHEMISTRY – III- Theory	2020	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs
48	BP602T.	PHARMACOLOGY-III- Theory	2020	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition, emphasis on the principles of toxicology and chrono pharmacology.
49	BP603T.	HERBAL DRUG TECHNOLOGY- Theory	2020	This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs
50	BP604T.	BIOPHARMACEUTICS AND PHARMACOKINETICS- Theory	2020	This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems raised therein

51	BP605T.	PHARMACEUTICAL BIOTECHNOLOGY - Theory	2020	Biotechnology has a long promise to revolutionize the biological sciences and technology. Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting. Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. Biotechnology has already produced transgenic crops and animals and the future promises a lot more. It is basically a research-based subject.
52	BP606T.	PHARMACEUTICAL QUALITY ASSURANCE- Theory	2020	This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs
53	BP607P.	MEDICINAL CHEMISTRY- III- Practical	2020	This course helps to know how to separate and identify a compound given an unknown mixture. It imparts the knowledge on crude separation and identification techniques
54	BP608 P.	PHARMACOLOGY-III- Practical	2020	1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. 4. Demonstration of different simulation methods. 5. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments
55	BP609P.	HERBAL DRUG TECHNOLOGY-- Practical	2020	This subject gives the student the knowledge of basic understanding of herbal drug formulation and determination of herbal content

56	BP701T	Instrumental Methods of Analysis (Theory)	2020	<ol style="list-style-type: none"> 1) To understand selected instrumental analytical techniques (spectroscopic and chromatographic methods) and differentiate with volumetric analysis. 2) To gain knowledge on interaction of EMR with matter and to build the analytical understanding at the level of atom, group and molecular structure of organic and inorganic compounds with different functional groups and their applications in pharmacy. 3) To maximize knowledge on characterization and estimation of ions by spectroscopical techniques 4) To simplify affinity of matter with stationary phase and mobile phase, physical and chemical. This subject is intended to impart students about the fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.
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57	BP702T	Industrial Pharmacy II (Theory)	2020	<ol style="list-style-type: none"> 1. This course is designed to impart knowledge and skills necessary to train the students to be on par with the routine of Industrial activities in Production. 2. On completion of this course, it is expected that students will be able to understand. 3. Handle the scheduled activities in a pharmaceutical firm. Manage the production of large batches of pharmaceutical formulations
58	BP703T	Pharmacy Practice (Theory)	2020	<ol style="list-style-type: none"> 1. Understand the elements of pharmaceutical care and provide comprehensive patient care services 2. Interpret the laboratory results to aid the clinical diagnosis of various disorders. <p>Provide integrated, critically analysed medicine and poison information to enable healthcare professionals in the efficient patient management</p>
59	BP704T	Novel Drug Delivery System (Theory)	2020	<ol style="list-style-type: none"> 1. This subject is designed to impart basic knowledge on the area of novel drug delivery systems. Upon completion of the course student shall be able 2. To understand various approaches for development of novel drug delivery systems. 3. To understand the criteria for selection of drugs

				and polymers for the development of Novel drug delivery systems, their formulation and evaluation
60	BP705P	Instrumental Methods of Analysis (Practical)	2020	<ol style="list-style-type: none"> 1. Discusses the effect of impurities on the quality of drugs and behavioural pattern of drugs 2. Aids in understanding the SOP and usage of software associated with various analytical instruments 3. Helps in gaining knowledge of interpretation of spectra and of chromatograms
61	BP706PS	Practice School	2020	<ol style="list-style-type: none"> 1. Work in team and undertake a project in the area of Pharmacy 2. Present, exhibit and document the project work • Develop a project report 3. Apply concepts of pharmaceutical sciences for executing the project 4. Apply appropriate research methodology while formulating a project 5. Define specifications, synthesize, analyse, develop and evaluate a project
62	BP801T	Biostatistics and Research Methodology (Theory)	2020	<ol style="list-style-type: none"> 1. Develop the ability to apply the methods while working on a research project work

				<ol style="list-style-type: none"> 2. Describe the appropriate statistical methods required for a particular research design 3. Choose the appropriate research design and develop appropriate research hypothesis for a research project 4. Develop a appropriate framework for research studies
63	BP802T	Social and Preventive Pharmacy (Theory)	2020	<ol style="list-style-type: none"> 1. After the successful completion of this course, the student shall be able to: Acquire high consciousness/ realization of current issues related to health and pharmaceutical problems within the country and worldwide. 2. Have a critical way of thinking based on current healthcare development. <p>Evaluate alternative ways of solving problems related to health and pharmaceutical issues</p>
64	BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2020	<ol style="list-style-type: none"> 1. Compare the in-vitro drug release profile of different marketed products 2. Perform the solubility enhancement techniques for improvement of drug release of poorly water-soluble drugs 3. Estimate the bioavailability (absolute and relative) and bioequivalence from the given clinical data 4. Calculate the drug content in blood sample using Area Under Curve approach

				5. Calculate and interpret various pharmacokinetic parameters from the given clinical data
65	BP803ET	Pharma Marketing Management (Theory)	2020	
66	BP804ET	Pharmaceutical Regulatory Science (Theory)	2020	<ol style="list-style-type: none"> 1. Explain the process of drug discovery, development and generic product development 2. Describe the regulatory approval process and registration procedures for API and drug products. 3. Basic understanding of regulations of India with other global regulated markets 4. Understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 5. Learn the basic understanding the importance of orange book, Federal Register, Code of Federal Regulatory, and purple book
67	BP805ET	Pharmacovigilance (Theory)	2020	<ol style="list-style-type: none"> 1. Explain the regulatory requirements for conducting clinical trial 2. Describe in detail about various types of clinical trial designs 3. Explain the responsibilities of key players involved

				<p>in clinical trials</p> <p>4. Describe the documentational requirements for Clinical trials</p> <p>5. Explain Adverse drug reaction and its management</p>
68	BP806ET	Quality Control and Standardization of Herbals (Theory)	2020	<p>1. Explain basic tests for drugs to obtain dosage form for pharmaceutical substances and medicinal plants</p> <p>2. Explain methods for evaluation of pharmaceutical substances, medicinal plants and commercial crude drugs.</p> <p>3. Describe guidelines for cGMP, GAP, GMP and GLP for quality assurance of herbal drugs in industry</p> <p>4. Describe guidelines for quality control of herbal drugs and evaluation of safety and efficacy of herbal medicines.</p> <p>5. Explain regulatory approval process and their registration in Indian and international markets.</p>
69	BP807ET	Computer Aided Drug Design (Theory)	2020	<p>1. Explain the various stages of drug discovery and learn the concept of bioisosterism.</p> <p>2. Describe physicochemical Properties and the</p>

				<p>techniques involved in QSAR</p> <ol style="list-style-type: none"> 3. Explain various structure-based drug design methods (Molecular docking, Denovo drug design) 4. Learn the concept of pharmacophore and modelling techniques 5. Explain the various techniques in Virtual Screening
70	BP808ET	Cell and Molecular Biology (Theory)	2020	<ol style="list-style-type: none"> 1. It deals with understanding the molecular aspects of the biology. 2. It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription. 3. It also helps in understanding the concepts of cellular function 4. It deals with understanding the molecular aspects of the biology. It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription. <p>It also helps in understanding the concepts of cellular function</p>

	BP809ET	Cosmetic Science (Theory)	2020	<ol style="list-style-type: none"> 1. Cosmetic Science is an interdisciplinary applied science program providing students with the opportunities to develop professional skills and fundamental concepts driving cosmetic science. 2. Cosmetic Science focuses on the needs of the cosmetic industry and its consumers, in addition to providing students with the critical and evaluative skills to become professional scientists. 3. Cosmetic Science covers a range of sciences, both pure and applied, formulation development and industry operations, all of which give you a broad range of career opportunities.
	BP810ET	Experimental Pharmacology (Theory)	2020	<ol style="list-style-type: none"> 1. Study of commonly used instruments in experimental pharmacology. 2. Introduction to CPCSEA guidelines and OECD guidelines. 3. Introduction to animal physiology with their biochemical reference values in various

				<p>animal species.</p> <p>4. Study of methods for collection of blood, body fluids and urine from experimental animals.</p> <p>5. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).</p>
	BP811ET	Advanced Instrumentation Techniques (Theory)	2020	<p>1. Apply the analytical techniques to study bulk-drug pharmaceuticals, quality control.</p> <p>2. Develop in-depth knowledge and critical awareness of the application of modern.</p> <p>3. Know preparation and standardization of various concentrations of acids and bases.</p> <p>4. Understand the basic concepts involved in electro-analytical techniques and its types.</p> <p>5. Understand theory, principle, types and techniques of coulometric titration</p>
	BP812ET	Dietary Supplements and Nutraceuticals (Theory)	2020	<p>1. Know different Acts and guidelines that regulate Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food &</p>

				<p>Nutraceuticals industry in India.</p> <p>2. Understand the approval process and regulatory requirements.</p> <p>3. Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food& Nutraceuticals</p>
	BP813PW	Project Work	2020	<p>6. Work in team and undertake a project in the area of Pharmacy</p> <p>7. Apply concepts of pharmaceutical sciences for executing the project</p> <p>8. Apply appropriate research methodology while formulating a project</p> <p>9. Define specifications, synthesize, analyse, develop and evaluate a project</p> <p>10. Present, exhibit and document the project work • Develop a project report</p>

46. M.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2020	<ol style="list-style-type: none"> 6. Describe the instruments in experimental pharmacology. 7. Know CPCSEA guidelines and OECD guidelines. 8. Know animal physiology with their biochemical reference values in various animal species. 9. Do collection of blood, body fluids and urine from experimental animals. 10. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
2	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2020	<ol style="list-style-type: none"> 1. The pathophysiology of selected disease states and the rationale for drug therapy. 2. The controversies in drug therapy. 3. The importance of preparation of individualized therapeutic plans based on diagnosis. 4. Understanding the concepts of Clinical research;Therapeutic drug monitoring (TDM) ; concepts of Pharmacotherapeutics, Management & Current Good Clinical Practice of various diseases. 5. Studying of various types, mechanisms of Drug interaction; rational for drug combinations;

				Drug Toxicity and its prevention; Adverse drug reactions and its monitoring
3	MPH 103	Practical 1	2020	<ol style="list-style-type: none"> 1. Recording of concentration response curve (CRC) of acetylcholine 2. Record of the CRC of 5-HT on rat fundus preparation. 3. Record of the CRC of histamine on guinea pig ileum 4. Inotropic and chronotropic effects of drugs on isolated frog heart
4	MPH 104	Practical-II(MAT)	2020	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2020	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications

				<p>of chromatographic techniques</p> <p>4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2020	<p>1. Awareness of ethical issues and basic ethical approaches.</p> <p>2. Improved writing skills and understanding of ethical conflict.</p> <p>3. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>4. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>5. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2020	<p>1. Know the fundamental knowledge on the structure and functions of the various systems of the human body.</p> <p>2. understanding all the homeostatic mechanisms of the body</p> <p>3. Understand the relationship of anatomy with various disciplines of pharmacy.</p> <p>4. Understand the dynamic constancy of the body, cell and its components, tissue and types</p>

				of tissue, blood and its function and composition
8.	MPH 201A (Pharmacology)	Molecular Pharmacology	2020	<ol style="list-style-type: none"> 1. Explain the modes of action of drug at the cellular level by describing their interactions with target proteins 2. Explain the receptor signal transduction processes. 3. Explain the molecular pathways affected by drugs. 4. Understanding the applicability of molecular pharmacology and biomarkers in drug discovery process. 5. Outline the molecular features that are responsible for agonist and antagonist binding, and coupling to effector processes, with reference to the nicotinic, muscarinic, and β-adrenergic receptors
9.	MPH 202 A	Methods in Drug Evaluation	2020	<ol style="list-style-type: none"> 1. Know the commonly used instruments in experimental pharmacology. 2. describe the animal physiology with their biochemical reference values in various animal species. 3. Study of methods for collection of blood, body fluids and urine from experimental animals. 4. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
10.	MPH 203	Practical 1	2020	<ol style="list-style-type: none"> 1. Calculation of the PA_2 Calculate the PA_2 Value

				<ol style="list-style-type: none"> 2. Interpolation bioassay 3. Matching or bracketing bioassay 4. Three point bioassay 5. Four point bioassay
11	MPH 204	Practical-II(BPK)	2020	<ol style="list-style-type: none"> 1. Compare and differentiate between compartmental and non compartmental analysis 2. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms 3. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data. 4. Compare the bioequivalence of two drug products
12	MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2020	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to

				developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 2. Learn about morals, values & work ethics. 3. Develop commitment 4. Learn about the different professional roles. 5. Ethical, social and environmental awareness 6. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2020	
15	MPH 301	Mid-Term Evaluation of Research project	2020	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course

				of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2020	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.

M. Pharmacy (Pharmaceutics)

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MPH 101B	ADVANCED	2020	1. Course designed to impart advanced

		PHARMACEUTICAL TECHNOLOGY		<p>knowledge and skills required to learn various aspects and concepts at pharmaceutical industries.</p> <ol style="list-style-type: none"> 2. The Active Pharmaceutical Ingredients and Generic drug Product 3. The elements of Preformulation studies, Objectives Upon completion of the course, student shall be able to understand Optimization Techniques. 4. Industrial Management and GMP Considerations, development & Stability Testing, sterilization process, Pilot Plant Scale Up Techniques & packaging of dosage forms
2	MPH 102B(Pharmaceutics)	Advanced Pharmaceutics	2020	<ol style="list-style-type: none"> 1. Upon completion of this program the student will have fundamental knowledge in preparing conventional dosage forms, pharmaceutical calculation involved in formulation and appreciate the importance of good formulation for effectiveness. 2. The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms using solubility studies and basic theories of dissolution.

				3. To formulate and evaluate various novel drug delivery systems based on the molecular weight determination of polymers and its stability studies.
3	MPH 103	Practical-I(PHARMACEUTICS)	2020	<ol style="list-style-type: none"> 1. The passage of drugs, biopharmaceutical parameters. 2. How to do dissolution studies for the dosage forms to know the bioavailability of the drugs. 3. Solubility studies for the drugs based on its pH and its applications in the formulations of drug delivery systems. 4. To determine the molecular weight of the polymers. 5. Gives an fundamental knowledge on the stability studies
4	MPH 104	Practical-II(MAT)	2020	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 7. Discusses the principle and applications of chromatographic techniques 8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage form
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2020	<ol style="list-style-type: none"> 5. Explains the importance of modern instrumentation in pharmaceutical analysis 6. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR,

				<p>FTIR.</p> <p>7. Discusses the principle and applications of chromatographic techniques</p> <p>8. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.</p> <p>9. Explains the concepts of Statistics and their applications in pharmacy</p>
6.	MPH 106	Human Values and Professional Ethics-I	2020	<p>6. Awareness of ethical issues and basic ethical approaches.</p> <p>7. Improved writing skills and understanding of ethical conflict.</p> <p>8. Enables students to develop ability for moral reasoning and act with ethical deliberations.</p> <p>9. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas.</p> <p>10. Learn how to live peacefully</p>
7.	MPH 107	Comprehensive Viva	2020	
8.	MPH 201B (Pharmaceutics)	INDUSTRIAL PHARMACY	2020	<p>1. The elements of preformulation studies.</p> <p>2. Acquire skill in preparation of different types of tablets.</p> <p>3. Acquire knowledge for evaluation of various dosage forms.</p> <p>4. Acquire the knowledge of processing of dosage form on large scale that suit pharma industry</p>
9.	MPH202B(Pharmaceutics)	PROCESS VALIDATION & CGMP	2020	<p>1. Acquire knowledge on various quality assurance systems, processes and current regulatory guidelines related to</p>

				<p>manufacturing and distribution.</p> <p>2. Address quality issues and provide solutions needed to attain Quality leadership in an environment of continual improvement.</p> <p>3. Understand the importance of effective documentation.</p> <p>4. To prepare professionally competent individuals with Quality concept being engrained to achieve global quality standards in pharmaceutical industries</p>
10.	MPH 203	Practical-I	2020	<p>1. Gain knowledge and acquire skills to prepare different types of tablets.</p> <p>2. Highlights the handling of different equipment's for the preparation and evaluation of various dosage forms</p>
11	MPH 204	Practical-II(BPT)	2020	<p>5. Compare and differentiate between compartmental and non compartmental analysis</p> <p>6. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms</p> <p>7. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data.</p>

				8. Compare the bioequivalence of two drug products
12	MPH 205	BIO-PHARMACEUTICS & PHARMACOKINETICS	2020	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2020	<ol style="list-style-type: none"> 7. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 8. Learn about morals, values & work ethics. 9. Develop commitment 10. Learn about the different professional roles. 11. Ethical, social and environmental awareness 12. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2020	
15	MPH 301	Mid-Term Evaluation of Research project	2020	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout

				<p>the program.</p> <ol style="list-style-type: none"> 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2020	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a

				large, relatively unstructured "assignment" over the course of the semester.
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1.1.3 Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development

2021-2022

SVU COLLEGE OF ARTS

1. Adult & Continuing Education

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MAAE -1.1	Alternative Learning Systems	2021	<ol style="list-style-type: none">1. Remembrance of different forms of learning.2. Application of different technology support services for effective learning.3. Organization and administration of nonformal education programmes.4. Evaluation of nonformal education programmes.	
2	MAAE-1.2	Policy Studies In Adult/Continuing Education	2021	<ol style="list-style-type: none">1. Identify the socio-political movements during pre-independence period for the promotion of literacy.2. Analyze the trends of adult education programmes during post-independence period from social education to saakshar Bharat Mission.3. Describe the National and International organizations efforts for the promotion of literacy at various levels.4. Explain the State & Central Govt policies on adult education and special reference to literacy, post-literacy and continuing education.	
3	MAAE-1.3	Adult Psychology And Learning	2021	<ol style="list-style-type: none">1: Acquire knowledge on psychological foundations and its relevance to Adult Education and Learners.	

				<p>2: Learn classification of motives and motivation techniques to motivate the Adult Learner.</p> <p>3: Compare the Adult Personality & Child personality based on three Domain principles.</p> <p>4: Examine the Adult Learning characteristics and theories of learning, eventually he/she will apply all aspects in adult class room activity.</p>	
4	MAAE-1.4	Socio-Philosophical Foundatons Of Adult Education	2021	<ol style="list-style-type: none"> 1. Create thinking capacity to survival in the present society with philosophical approach. 2. Know great eminent leaders biography, sacrifices their lives for society. 3. Aware Dalit movement, women movement, co-operative movement in society especially rural areas. 4. Examine the problems of society with reference to bonded labor, child labour, untouchability, transgender and provide awareness on human rights. 	
5	MAAE-1.5	Communication Methods in Adult Education	2021	<ol style="list-style-type: none"> 1. Remembering the concept and methods of communication and their application to adult Education 2. Identifying different models of 	

				<p>communication.</p> <p>3. Describing the media of communication and their utility in continuing education.</p> <p>4. Realising the use of different Audio-visual aids in teaching learning process.</p>	
6	MAAE-1.6	Human Values And Professional Ethics-I	2021	<p>know the importance of professional ethics and to implement the ethical values in various professions.</p> <p>2. understand about the Good and bad values and to analyze the basic moral concepts.</p> <p>3. inculcate the students in the aspects of pursharthas .</p> <p>4. Know different crimes and its impact on personal and social life and theories of punishment</p>	
7	MAAE-2.1	Recent Trends In Adult And Continuing Education	2021	<p>.Identify the variations of literacy growth among States and Nation with reference to gender, rural and urban.</p> <p>2.Recognize the functions, activities of JSS and Saakshar Bharat Mission, to promote Life Long learning.</p> <p>3. Understand the five-year plan period programmes in terms of literacy, non-</p>	

				formal and functional literacy. 4. Examine the significance of the extension activities as third dimension of literacy programmes at field level.	
8	MAAE-2.2	Curriculum And Methods Of Literacy Teaching	2021	<ol style="list-style-type: none"> 1. Remembering the meaning, foundations and theories of curriculum development with reference to adult learners. 2. Distinguishing different principles and approaches of curriculum development. 3. Interpreting the needs and interests of lifelong learners. 4. Executing to evaluate Adult Education programmes 	
9	MAAE-2.3	Research Methods In Adult Education	2021	<ol style="list-style-type: none"> 1. Understanding the concepts and methods of research. 2. Adopting the suitable sampling methods for research studies. 3. Developing tools for research studies. 4. Ability of research report writing. 	
10	MAAE-2.4	Field Work & Practical Assignments	2021	Application of knowledge and	

				<p>skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	
11	MAAE-2.5	Management Of Adult/Continuing Education	2021	<ol style="list-style-type: none"> 1. Know the principles of Management, Planning and Organizing capacity to conduct Adult Education Programmes. 2. Develop Social and Communication Skills to organize village, Mandal, District, State and Central level programmes. 3. Acquire project techniques for sustainable programmes. 4. Learn and enhance research skills to write project report, monitoring and evaluation of data of Adult Education Programme. 	
12	MAAE-2.6	Human Values And Professional Ethics-Ii	2021	Understand and recognize the importance of Value Education & Human Values and also try	

				<p>to follow the traditional values of family, women and elders in the society.</p> <p>2: Examine code of ethics for medical and health care professionals. They Can sensitize the rural people on Health Issues & Problems.</p> <p>3: Explain the Environmental Protection and relationship between Man and Nature, causes of pollution and impact on environmental health.</p> <p>4: Recognize the need of Social ethics and fight against the anti-social activities, Organ trade, Human trafficking etc.</p>	
13	MAAE-3.1	Training In Adult And Continuing Education	2021	<ol style="list-style-type: none"> 1. Identify the importance of training in Adult and Continuing Education programmes and differences between training and education. 2. Know the training methods, training materials to organize the Adult and Continuing Education programmes. 3. Follow the teaching methods like Lecture, discussion, demonstration and Role Play methods. 4. Recognize training facilities at different levels like National, State, District and Local. 	

14	MAAE-3.2	Comparative Studies In Adult Education	2021	<p>1: Compare the Adult Education Programmes of different countries based on its aims and significance.</p> <p>2: Compare and contrast of Adult Education movement and progress in different countries like UK, USA, Denmark etc with reference to India.</p> <p>3: Find out the similarities and dissimilarities of Adult Education Programs in selected countries.</p> <p>4: Identify the problems of Adult Education in terms of Planning, Organization and Budget activities in developing countries and India.</p>	
15	MAAE-3.3	Material Development For Adult And Continuing Education	2021	<ol style="list-style-type: none"> 1. Identify the significance of learning materials in Adult Education classes. 2. Design the teaching learning activity objectives for better performance of Teacher educator in Adult Education Programmes. 3. Enhance language forms and competence and tune with the needs of the learner. 4. Develop teaching learning materials for self-learning 	
16	MAAE-3.4a	Peoples' participation And Development	2021	<ol style="list-style-type: none"> 1. Analysing the role and functions of 	

				<p>people committees,</p> <ol style="list-style-type: none"> 2. Understanding the functions of Panchayat Raj institutions. 3. Knowledge on the role of co-operatives in rural development. 4. Ability to catalyse the performance of PRIs and co-operatives. 	
17	MAAE-3.4b	Vocational Education And Skill Development	2021	<ol style="list-style-type: none"> 1. Identify the relationships of Vocational Education and Adults development. 2. Understand the institution training importance and its practices in vocational training. 3. Identify the issues of Rural Vocational training in India and Asian Countries. 4. Provide Vocational Guidance and Counselling for Adult trainees. 	
18	MAAE-3.4c	Guidance And Counselling In Adult And Continuing Education	2021	<ol style="list-style-type: none"> 1. Remembering the concept and theories and perspectives of guidance and counselling in educational process. 	

				<ol style="list-style-type: none"> 2. Recollecting understanding and analysis of educational problems of a clientele group. 3. Knowing the roles and functions of guidance counsellor. 4. Analysing the use of computers and internet in guidance and counselling. 	
19	MAAE-4.1	Monitoring And Evaluation	2021	<p>Identify the concept of monitoring and monitoring systems in adult education</p> <ol style="list-style-type: none"> 2. Describe the different evaluation models. 3. Demonstrate the tools and techniques of evaluation. 4. Understand the importance of learner evaluation. 	
20	MAAE-4.2	Human Resource Development And Management In Lifelong Learning	2021	<ol style="list-style-type: none"> 1. Understand the importance of human resource development and its historical background. 2. Analyze the human capital and its functions in Adult Education. 3. Explain the cost benefit process and problems of measurements. 4. Identify the need of planning in human resource development and 	

				relation to Adult Education.	
21	MAAE-4.3a	Environment And Education	2021	<p>1. Understand the fundamental aspects of environment and need of environmental protection.</p> <p>2: Interpret the environmental crisis with reference to pollutions and its impact of human life need of Environmental Conservation.</p> <p>3: Know the environmental laws and role of individual and community to Control environmental pollution.</p> <p>4: Explain Ecology and eco factors for Ecological Balance.</p>	
22	MAAE-4.3d	Population Education	2021	<ol style="list-style-type: none"> 1. Recollecting the concepts, needs and importance of population related terminologies. 2. Analysing the causes and consequences of population growth. 3. Distinguishing the roles of different agencies in promotion of population education and control. 4. Identifying the different National population policies and influences 	

				fertility, mortality and migration.	
23	MAAE-4.4	Dissertation / Project Work	2021	<p>Application of knowledge and skills in project designing</p> <p>2.Ability to do research work.</p> <p>3.Finding solutions to the problems identified in his research work.</p> <p>4.Preparing the research report.</p>	

2. Ancient Indian History, Cultural Archeology

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant Document
1	AIHC&A-105	(B) Advanced Archaeological Theory and Research Methodology	2021	<ul style="list-style-type: none"> ➤ The student will be able to understand the basic features of various theories and thoughts used in archaeological interpretations. ➤ They can formulate a research proposal and decide on appropriate materials and methods of analysis. ➤ They can present the findings and the process of conducting research in written and verbal formats 	

2	AIHC&A-106	(B) Indian Religious Movements.	2021	<ul style="list-style-type: none"> ➤ The students can able to understand well the origin and development of various religious movements and spiritual heritage of India ➤ Students also femilarise with the complex religious system in India ,their practices and reforms
3	AIHC&A-205(A)	(A) History of Indian Archaeology	2021	<ul style="list-style-type: none"> ➤ Students will familiarize in understanding the history of archaeological studies and its progress from its inception up to recent trends. ➤ Help the students in assessing the services rendered by pioneers of archaeologists ➤ It also helps to understand archeological studies in pre and post Independence and emergence of various branches
4	AIHC&A-205 (B)	(B) Cultural Heritage Management	2021	<ul style="list-style-type: none"> ➤ Students can understand well the concept of cultural heritage, world and heritage monuments in India ➤ Can acquire the knowledge about the need of their conservation and promotion of awareness among the public.
5	AIHC&A-206 (B)	(B) Early History of South East Asia	2021	<ul style="list-style-type: none"> ➤ Students can be able to understand thoroughly the Early History of South East Asia, ➤ the contacts between India and South East Asia in terms of Cultural, religions and economic exchanges ➤ Student can be well versed in assessing the India's early cultural contacts and its influence in South East Asia

6	AIHC&A- 303(C)	(C) Laboratory Methods in Scientific Archaeology	2021	<ul style="list-style-type: none"> ➤ Students are familiarized with basic descriptive technique and Preliminary study of various categories of objects studied by archaeologists, such as lithics, pottery, plant fossils, human remains, rocks and minerals sediments, map reading
7	AIHC&A- 303(D)	(D) Temple Studies	2021	<ul style="list-style-type: none"> ➤ Students can be familiar in understanding the temple culture, knowledge on the forms of worship, origin and development of image worship, temples and their role in social, economic, religious , cultural history and professional groups involved in its functions and administration .
8	AIHC&A -304	Soft Skills in Archaeology	2021	<ul style="list-style-type: none"> ➤ The students can acquire knowledge on the basics of computer and its usage in general ➤ They can expertise the working skills in computational archaeology and be able to equip for future research and enhance employability.
9	AIHC&A-403(C)	(C) Tour Guiding and Management	2021	<ul style="list-style-type: none"> ➤ The students can familiarize the knowledge needed to tourism guide activities. ➤ It will equip the students with the solid foundation to build upon the fundamentals of tour guide, useful skills and expertise that can assist employment in Tourism Industry

10	AIHC&A-403(D)	(D) Conservation of Cultural Property	2021	<ul style="list-style-type: none"> ➤ The student can equip with various methods and techniques followed in the Conservation and Preservation of Cultural Property. ➤ The students were able to possess the essential skills and knowledge that can assist employment in Archaeology and museum as conservator
11	AIHC&A-404	History of Science and Technology in Ancient India	2021	<ul style="list-style-type: none"> ➤ Students will able to understand the history of science and technology and its progress through the ages, introduction and impact of the stone and metal ages and nature of scientific developments in ancient India. ➤ They also acquire the knowledge on the history of Mathematical Sciences and Ayurveda
12	AIHC&A-405(B)	(B)History of Vijayanagara Empire	2021	<ul style="list-style-type: none"> ➤ The non-history student as an external elective can familiar in understanding the history of Vijayanagara empire and their contribution to south Indian culture

3. Area Studies Programme

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	SE-101	Early Cultural History of Southeast Asia	2021	The Programme on Southeast Asian and Pacific Studies (SEAPS) will enrich the students largely related to geographical, historical, political, economic, social and strategic engagement of India with the states of Southeast Asian and South Pacific countries.

				Educate the students with interdisciplinary outlook and multidisciplinary engagement on Southeast Asian region.
2	SE-102	Regional Geography of Southeast Asia	2021	Comprehensive understanding of Southeast Asian and Pacific region through multidisciplinary approach Educate the students with interdisciplinary outlook and multidisciplinary engagement on Southeast Asian region.
3	SE-103	Colonization of Southeast Asia	2021	Students will have adequate knowledge on rise and fall of Portuguese Students differentiate the colonial powers that ruled Southeast Asia
4	SE-104	Ancient Indian History up to 1206 A.D.	2021	Students comprehend ancient Indian History, Indus Valley Civilization, Vedic Culture and Jainism and Buddhism. Know the rise of different Dynasties and contribution to Indian Culture.
5	SE-105a	Modern European History, 1870-1991	2021	Differentiate volatile political situation in Europe Earn broad understanding of Bismarck and consolidation of the Germany.
6	SE-105b	History of Indian Constitution, 1773- 1947	2021	Students learn different stages of national movement Gain full understanding of the Mahatma Gandhi Learn the contributions and sacrifices of the various national leaders
7	SE-105c	Indian National Movements	2021	Students comprehend the importance of acts in government Gain knowledge on the Indian Independence Act of 1935 Know the salient features of Indian Constitution
8	SE - 106a	Medieval Indian History 1206	2021	Students will gain knowledge on Major dynasties of Medieval India Students know the great Indian rulers of Medieval period

		A.D.–1707 A.D		Students comprehend the advent of Europeans
9	SE-106b	History of Asian and African Nationalism	2021	Know the changing trends in Nationalist movements Students understand the nationalist movements in Southeast Asia Learn about the nationalist movements in Africa
10	SE-201	Contemporary Cultural History of Southeast Asia	2021	Students list the Christian Missionary activities in Southeast Asian countries. Knows the factors of Indian Emigration, and Chinese economic contribution in Southeast Asia. Comprehensive grasp over different cultures and religions in Southeast Asia
11	SE-202	Modern History of China 1839-1976	2021	Students know Western contacts, rebellions and reforms in China Advanced understanding on Sun Yat Sen, Chiang Kai-Shek and Mao Tse-Tung Distinguish Reconstruction and Consolidation of China and its foreign relations
12	SE-203	Regional Geography of South Pacific and East Asia	2021	Students identify physical setting, landforms, climate and soils of South Pacific. Comprehend on Australia, New Zealand, Japan and China Recognize the economic trends in South Pacific and East Asian nations
13	SE-204	Nationalism in Southeast Asia	2021	Understand causes for the rise of nationalism and movements in different Southeast Asian countries. Earn knowledge on the Japanese Occupation of Southeast Asia during the Second World War
14	SE-205a	Modern Indian History 1757-1965	2021	Students understand Indian sub-Continent and the Europeans arrival. Students distinguish the causes for the rise of nationalism and various

				phases of Independence movement.
15	SE-205b	Indian Foreign Policy	2021	Learn the dynamics of Indian foreign policy Earn broad understanding on Indian foreign relations Understand India in the SAARC
16	SE-205c	International Organisations	2021	Learn about necessity of International Organisations. Earn broad understanding of Bismarck and consolidation of the Germany. Understand global politics in the two world wars and the cold war
17	SE-206a	History of USA from 1789 - 1900	2021	Learn about American war of Independence Develop knowledge on the roles of Presidents of the USA Learn the causes for the Civil War, Abraham Lincoln and era of American Imperialism.
18	SE-206a	International Relations	2021	Students know the meaning, nature and scope of International Relations. Gain knowledge on the Cold War and New International Economic Order. Acquainted with the foreign policies of various countries; and learn about League of Nations and UNO.
19	SE-301	Southeast Asia and World Politics	2021	Students learn about the different political regimes in Southeast Asian nations. Comprehend on the contemporary political and economic conditions in Southeast Asian countries
20	SE-302	Indochina Cambodia, Laos	2021	Students will learn early Western contacts and establishments of French protectorates over Indochina states.

		and Vietnam (1802-2000)		Gain knowledge on French Administration and freedom movements in Indochina.
21	SE-303a	Modern History of Japan 1854-1975	2021	Knows Japan's militarization, Russo Japanese war and the First World War Gain knowledge on US Occupation of Japan and Post World War-II developments and Japanese foreign relations.
22	SE-303b	East Asian Development in the Post Cold War	2021	Comprehend on the disintegration of Soviet Union and Emergence of New World Order. Ability to analyze security concerns in the post Cold War and perceptions of China, Japan and North Korea.
23	SE-303c	Indian Diaspora	2021	Know the reasons of Indian migration to Southeast Asian countries. Learn Indian migrant's socio-economic contribution to host nations.
24	SE-303c	Research Methodology	2021	Students will be able to distinguish the difference between primary and secondary source. Will be in a position to make use of various sources available for his or her research work.
25	SE-303d	Research Methodology	2021	Develop understanding on Area Studies and other disciplines. Gain knowledge on the history of certain geographical area.
26	304	Skills and approaches in Understanding Area Studies	2021	Develop understanding on Area Studies and other disciplines. Gain knowledge on the history of certain geographical area. Learn the skills of distinguishing social, economic and politics with other areas.
26	SE-305a	India and the World	2021	Develop understanding of Non-Aligned Policy under Jawaharlal Nehru and Indira Gandhi

				Build knowledge on India's Role in the United Nations
27	SE-305b	Emerging Asia and the World	2021	Develop understanding of Economic and Social Progress in Asia and also Economic crisis and Recovery of Asia Comprehensive grasp over Foreign Direct Investments in Asia, Rise of China and also about India's Look East Policy.
28	SE-401	Regional Cooperation in Southeast Asia	2021	Students learn about early organizations like ASA, SEATO and MAPHILINDO. Develop understanding on the evolution of ASEAN from 5 to 10 members Focus on the ASEAN Summit Meetings, ARF and AFTA.
29	SE-402	Economic Landscape of Asia-Pacific	2021	Develop an understanding of the rise of industrial economies like Singapore, Malaysia, Thailand and Indonesia. Comprehend of the economies of Australia and New Zealand.
30	SE-403a	Post Cold War World Order	2021	Students gain knowledge on Globalization and Multi National Companies. Differentiate Regional and Multilateral Cooperation and the roles of ASEAN and SAARC.
31	SE-403b	Ethnicity And Social Transformation In Contemporary Southeast Asia And Australia	2021	Students understand archeology of South Pacific and settlement patterns Understand the European Colonization and Socio-Economic transformation Learn basic features of Australia, New Zealand and Fiji Societies and Multiculturalism.
32	SE-403c	Developing Blue Economy	2021	Acquainted with the Blue Economy, Marine Governance and Ocean Technologies.

				<p>Gain knowledge on ports and shipping, oceanic resources and marine bio-technology. Develop an understanding on Renewable Ocean Energy and its Importance.</p>
33	SE-403d	Energy, Environment and Sustainable Development	2021	<p>Develop an understanding of the Types of energy sources in the world and India Learn about environment issues and emerging green technologies. Know the need of Renewable Energy, Green Energy, Bio-Diversity and eco systems.</p>
34	SE-404	Project: Dissertation+Viva	2021	<p>Explain the results of their project. Learn in detail on the broad knowledge of their topic Students leave their suggestions for the development of tourism in the country.</p>
35	SE-405a	India – Australia Relations	2021	<p>Learn about Littoral States of Indian Ocean and Complementarities between India-Australia Ability to analyze Political Issues and security concerns of both nations.</p>
36	SE-405b	India and the Asia - Pacific	2021	<p>Students understand major international developments happened after the Cold War Gain knowledge on the Indian foreign policy changes with Southeast and East Asia</p>

Tourism:

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	T-101	Theoretical Concepts Of Tourism	2021	Develop the ability to know the functions and obligations of different Tourism organizations Student will also learn about the noted international travel agencies
2	T-102	Tourism Principles And Practices	2021	Student will also learn about Tourism industry and its forms Gain knowledge on the Tourism policy models and Tourism Organizations
3	T-103	Travel And Tourism	2021	To know the Tourism Regulations in detailed. To learn the importance of transport in Tourism Understands the importance of travel Document
4	T-104	Art, Architecture And Tourism	2021	Comprehend on the important schools of Art and Architecture evolved in India. Students will learn Evolution and developments of Indian Architecture from ancient to Modern period.

5	T-105a	Historical Perspectives Of Tourism	2021	Comprehensive grasp over the Tourism development in the Country Students also learn the Tourism policies and organizations in the country
6	T-105b	Socio-Economic Dimensions Of Tourism	2021	To comprehend on the global changes and their economic roles Gain knowledge on socio-economic development through tourism Comprehend on the environmental conservation
7	T-105c	International Tourism And Unesco Sites In India	2021	Students know changing trends in International tourism and in India Gain knowledge on the UNESCO Heritage sites Categorize important UNESCO tourism sites.
8	T - 106a	Tourism Products	2021	To know the concept of tourism products Students learn about the roles of major tourism products in India Identify different kinds of tourism destinations
9	T-106b	Transport Management	2021	Students will learn different Modes of Transport and understand transport linkages to Tourism Gain knowledge on the importance of manpower in Transport Business Comprehend the students how Transport Management is essential in Tourism.
10	T-201	Tourism And Geography	2021	Students will learn relationship between Geography and Tourism. Gain knowledge on the use of map reading and other tools

				Gain knowledge on the influence of geography on Tourism.
11	T-202	Indian Cultural And Heritage Tourism	2021	Understand the importance of unique Indian Heritage architecture of different religions Students will be in a position to distinguish between different art forms in India.
12	T-203	Rural And Urban Tourism	2021	To understand, analyse and evaluate the importance of Rural and Urban Tourism Students will be able to learn the need of infrastructure and economic benefits
13	T-204	Ecotourism	2021	Students will be in a position to assess the importance of Ecology in tourism sector. To make them realize how community based tourism is conducted
14	T-205a	Health And Medical Tourism	2021	Students comprehend on the various Medical Treatments available in India and strategy to attract Global medical Tourists. Learn the role of government and private sectors in promotion of Medical Tourism
15	T-205b	Virtual And E-Tourism	2021	To familiarize with digital tourism business concept. Students will understand emerging business models in E- tourism. Students would have cognizance of E-business and its strategies.
16	T-205c	Airline Ticketing And	2021	Comprehend on the necessary Travel services in Air travel

		Information Management		Student will also learn the use of gadgets and information technology in Tourism
17	T-206a	Travel Agency And Tour Operations Management	2021	Gain the skill of Itinerary preparation and Tour formulation process. Comprehend the functions of a travel agency and Rules and Regulations of the agency approval besides domestic travel operators
18	T-206b	Tour Packages And Itinerary Planning	2021	Students will gain techniques in finance management and execution of Itinerary planning familiar with the techniques and approaches for successful destinations visits.
19	T-301	Tourism Management	2021	Students Demonstrate managerial skills and to manage the Tourism environment To comprehend on the financial management based on the market environment
20	T-302	Emerging Trends In Tourism	2021	Student will also learn the Socio, Economic and Environmental impacts of tourism. To learn Tourism related laws, responsibilities and different acts related to tourism..
21	T-303a	Environment, Sustainable Development And Tourism	2021	Enables Students to learn the importance of environment in tourism Know about the different environmental declaration
22	T-303b	Tourism Research Methods	2021	Students will able to learn the skills of report writing and questionnaire design.

				Evaluate the difference between qualitative and quantitative methods
23	T-303c	Tourism And Human Resource Management	2021	Students know the Human resources policies, functions and importance. Student will also learn the skills of HRM challenges and opportunities.
24	T-303d	Conservation And Management In Tourism	2021	Students know about conservation, preservation, restoration and management Understand the role of Conservation organizations at national and international level
25	T- 304	Tourism Skills And Opportunities	2021	To demonstrate the learned skills on Tour commentary, destination interpretation and communication. Students gain knowledge on the problem solving methods like crisis management, Loss of documents and Law and order issues
26	T-305a	Tourism Industry In India	2021	Students learn about the growing hospitality, transport industries and their activities Students will know the public policies in strengthening the tourism sector
27	T-305b	Adventure Tourism	2021	Students will learn the minimum standards to be followed in Adventure tourism in land based, water based and Aerial based activities Student gain knowledge on the Adventure Tourism Destinations in India and also Problems and Prospects of the sector
28	T-401	Tourism Marketing	2021	Students will learn about the concepts, market management in Tourism. To know different types of marketing strategies related to the tourism industry. To acquaint with the effective marketing skills for tourism industry.

29	T-402	Planning And Development Of Tourism	2021	<p>Students comprehend the linkages with government and private sectors in Tourism</p> <p>Develop analytical views on policies of national governments and international bodies.</p>
30	T-403a	Tourism Entrepreneurship	2021	<p>Students will Identify various challenges and revival techniques relevant of enterprises.</p> <p>To gain knowledge on business strategies and diversifications in tourism</p>
31	T-403b	Tourism And Hospitality Management	2021	<p>Student will be in a position to distinguish between different types of accommodations in the hotel industry.</p> <p>Students will get familiar with the management techniques in the accommodation sector.</p>
32	T-403c	Understanding And Event Management	2021	<p>Students know the importance of MICE along with Event Planning, organizing and Marketing.</p> <p>Learn about customer care, marketing equipment and tools</p>
33	T-403d	Destination Planning And Marketing	2021	<p>Students know the importance resource analysis and Destination marketing</p> <p>Students comprehend on the Destination promotions</p>
34	T-404	Project: Dissertation+Viva	2021	<p>Explain the results of their project.</p> <p>Learn in detail on the broad knowledge of their topic</p> <p>Students leave their suggestions for the development of tourism in the</p>

				country.
35	T-405a	Globalization And Tourism	2021	Gain knowledge on the effects of Globalization and opportunities in Tourism Learn the skills to deal with different challenges like safety and security in the world
36	T-405b	Tourism Economics	2021	Students will learn the principles of Demand and Supply in Tourism chain Students will also understand how tourism helps to develop the global economy in general and Indian economy in particular.

4. Centre for Extension Studies

5. Centre for Gandhian Studies

6. Centre for Womens Studies

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	SVUWS 101	Introduction to Gender and Women's Studies	2021	<ul style="list-style-type: none"> Provides unique skills and knowledge to the student's developing ability to identify women's and feminist activities and accomplishments – especially those that have conventionally been neglected -- across a variety of cultures and historical context To pursue a career in counseling by demonstrating how human thoughts and behaviors are influenced by 	

2.	SVUWS 102	Principles of Management with Gender Lens	2021	<ul style="list-style-type: none"> • To sharpen students' ability in acquiring the management skills required in their own lives, at home and in work place; • To understand the issues involved in the management of different organizations. • To enable the students to plan and handle difficult situations in their life and in work places 	
3.	SVUWS 103	Gender, Patriarchy and Society	2021	<ul style="list-style-type: none"> • Create knowledge on workplace gender and power relations. • Provide skill on distribution of power by reinforcing and relying on gender roles. 	
4.	105(a)	Environment: Gender and Livelihood Challenges	2021	<ul style="list-style-type: none"> • Content supported to create green jobs and also helps indigenous and rural communities promote tourism and eco-business in ways that protect their cultural heritage, natural resources, ways of life and economic development 	
5.	105(b)	Social Process and Behavioral Issues: Gender Questions	2021	<ul style="list-style-type: none"> • Learned how humans behave and interact with one another. There are many positions in these fields, each offering a unique opportunity to work closely with people and help with behavioral issues, including mental illness 	
6.	105(c)	Education: Gender Achievements and Gaps	2021	<ul style="list-style-type: none"> • To create an awareness on the status of women's education • To appreciate the dimensions of gender education 	
7.	106(a)	Gender Sensitization and Training: Needs and Strategies	2021	<ul style="list-style-type: none"> • To create Gender sensitivity among the students in every part of life of a human being; • To impart knowledge on different methods of training to inculcate gender sensitivity among the students; 	
8.	106(b)	Communication, Soft Skills and Etiquette	2021	<ul style="list-style-type: none"> • Employability/ Skill development: Build impactful communication through proper body language. 	

9.	202	Health and Nutrition: Gender Analysis	2021	<ul style="list-style-type: none"> To explore nutrition professionals' perspectives of employability skills, and knowledge and skills required in the NGO's and Industry to understand and work on the issues of Women and Child health, nutritional status. 	
10. 57	203	NGO Management and Social Development	2021	<ul style="list-style-type: none"> NGO Management trains individuals working in bookkeeping, administration, raising money and operations in an NGO. Enhance skills on different NGO jobs like 	
11. 58	205(b)	Gender Identity and Leadership: Needs and Strategies	2021	<ul style="list-style-type: none"> Provides knowledge about social process and cultural understanding. It also develops a clear and precise conceptual clarity on gender and leadership. 	
12. 59	206 (a)	Human Rights with Gender Lens	2021	<ul style="list-style-type: none"> To impart the knowledge to the students on the inalienable aspects of human life viz., Human Rights and their evolution over the period of time; To enhance the awareness on the international initiatives 	
13. 60	206(b)	Financial Literacy and Management	2021	<ul style="list-style-type: none"> To present the underlying framework and concepts of Financial Management and Analyses in the context of changing Financial Management and overall business environment in the contemporary society. 	
14. 61	302	Research Methods and Statistics: Feminist Concerns	2021	<ul style="list-style-type: none"> This course equip students with a variety of different skills necessary to undertake and present feminist research at postgraduate level and to gain an understanding of key methodological, epistemological, 	
15. 62	303(a)	Capacity Building and Leadership: Gender Questions	2021	<ul style="list-style-type: none"> Acquire skills to Coordinate and organize training courses and workshops for various functionaries of line departments and other stakeholders/ agencies. This course entrust tasks related to training, capacity 	
16. 63	303(b)	Guidance and Counseling with Gender Perspectives	2021	<ul style="list-style-type: none"> To provide the students with sound technical knowledge on guidance; To develop the capacity of the students to tackle the problems that they may encounter during the course of their 	

17. 64	303(c)	Human Resource Management : Gender Analysis	2021	<ul style="list-style-type: none"> • To provide the conceptual and theoretical knowledge on Human Resources; • To train the students in the Management of Human Resources; 	
18. 65	303(d)	Women, Science and Technology: Gender Biases and Strategies	2021	<ul style="list-style-type: none"> • To inculcate ‘Scientific Temper’ among the students; • To understand how science and technology would assist women for their development; • To evaluate whether the science and technology would 	
19. 66	304	Computer Applications and Software Packages for Data Analysis	2021	<ul style="list-style-type: none"> • Apply basic skills for care and maintenance of computer and train as Professional in E-Office management. • To train the students to do their works such as document processing, data entry, data analysis, database 	
20. 67	305(a)	Social Values and Ethics : Gender Concerns	2021	<ul style="list-style-type: none"> • To understand the family values and ethics • To know about family structures and family dynamics • To develop a theoretical understanding of families and children 	
21. 68	305(b)	Governance: Gender Issues and Challenges.	2021	<ul style="list-style-type: none"> • To impart knowledge to the students on the need for and current status of women’s participation in politics and administration; • To enable the students to understand the Women and 	
22. 69	401	Entrepreneurship Development: Gender Analysis	2021	<ul style="list-style-type: none"> • To provide the theoretical and conceptual knowledge on Entrepreneurship; • To provide the knowledge about the procedures involved in the organization of new enterprises; 	
23. 70	402	Women’s Legislations – Gender Concerns	2021	<ul style="list-style-type: none"> • To enable the students to understand the constitutional and legal provisions; • To sensitize the society about legal rights of women and to encourage women’s effective participation in the society; 	
24. 71	403(a)	Participatory Learning, Methods and Extension Education	2021	<ul style="list-style-type: none"> • To understand the changing concept of extension, objectives and functions of Extension; a • To expose the students to outreach programmes to interact with the community; 	

25. 72	403(b)	Social Structure: Gender Biases and Questions	2021	<ul style="list-style-type: none"> • To create awareness among the students on historical evolution of social institutions; • To analyze the Social Construction and Hierarchy, Family to State, Industrial revolution; 	
26. 73	403(c)	Women's Health: A Life Cycle Approach	2021	<ul style="list-style-type: none"> • To acquire knowledge on physiological processes of one's own life; • To create an awareness regarding proper age of marriage, reproduction and the consequences early adolescent 	
27. 74	403(d)	Globalization: Gender Implications	2021	<ul style="list-style-type: none"> • To create awareness among the students on the ongoing process of globalization; • To analyze the impact of globalization on feminization of labour force, low wages and Income gender inequalities; 	
28. 75	405(a)	Media and Communication: Gender Concerns	2021	<ul style="list-style-type: none"> • To expose the students on the Feminist Theories of Mass Communication; • To create awareness among students how women are portrayed in movies, television and print media; 	
29. 76	405(b)	Women and Work: Gender Questions	2021	<ul style="list-style-type: none"> • To understand the concepts of work and work participation and workforce participation levels in India; • To familiarize with the theoretical knowledge about segregation in labour market and its impact; 	

6 ECONOMETRICS:

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	EMT 101	Microeconomic Theory I	2021	<ul style="list-style-type: none"> • The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. • The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face. • Microeconomics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms. • Microeconomics shows conditions under which free markets lead to desirable allocations. • The fundamental concepts of supply and demand, rational choice, efficiency, opportunity costs, incentives, production, profits, competition, monopoly, externalities, and public goods will help you to understand the world around you. 	

2	EMT 102	Macroeconomic Theory I	2021	<ul style="list-style-type: none"> • Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income, analyse the various income identities with government and international trade, define the concept of green accounting. • Understand Say's law of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principle of effective demand and income determination. • Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyse the theories of absolute and relative income hypotheses. • Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI. CO5. Illustrate the meaning of interest, analyse the various theories of interest • The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more. The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance. 	
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3	EMT 103	MathematicalMethods	2021	<ul style="list-style-type: none"> • Formulate mathematical models describing the dynamics of economic systems. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations. • Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm. • Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and cost. • Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations. • Students will get to learn applications of mathematical tools to economy. 	
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4	EMT 104	Practical I	2021	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 Able to find Inverse of a Matrix, System of Simultaneous Linear Equations and Cramer's Rule method.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
5	EMT 105	StatisticalMethods	2021	<p>CO1 Able to find Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation and Coefficient of Variation.</p> <p>CO2 Able to apply Binomial, Poisson, Normal and Log-Normal Distribution Correlation and Regression Analysis.</p> <p>CO3 Able to test small sample tests based on t, F and Chi-square distributions</p> <p>CO4 formulate Statistical Methods describing the dynamics of economic systems such as production function analysis and solve econometric analysis of underlying data use with knowledge advanced econometric tools and techniques can solve easily.</p> <p>CO5 Student can identify the relationship between the economic variables and test their significance which is key factor for economic analysis and policy making or business decisions.</p>
6	EMT 106	HumanValuesandProfessiona IEthics-I	2021	
7	EMT 201	MicroeconomicTheoryII	2021	<p>Course Objectives: The microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments. The factor prices</p>

8	EMT 202	Macroeconomic Theory II	2021	<p>CO1 The overarching goals of macroeconomics are to maximize the standard of living and achieve stable economic growth</p> <p>CO2 The goals are supported by objectives such as minimizing unemployment, increasing productivity, controlling inflation, and more.</p> <p>CO3 The macro economy of a country is affected by many forces, and as such, economic indicators are invaluable to assessing different aspects of performance.</p> <p>CO4 Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off.</p> <p>CO5 Objectives of Macroeconomic policies – Objectives of Monetary policy. New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.</p>	
9	EMT 203	Basic Econometrics	2021	<p>CO1 Adequate competency in the frontier areas of economic theory and methods.</p> <p>CO2 Formulation and estimation of a multiple regression model.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all models</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	

10	EMT 204	Practical II	2021	<p>CO1 Students can Identify Inter industrial relationships using Input-output analysis,</p> <p>CO2 analyse maximization of profits and minimization of costs can evaluate using Linear Programming,</p> <p>CO3 Analyse relationship of economic variables using simple and multiple regression models which are covered in basic Econometrics</p> <p>CO4 Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance</p> <p>CO5 They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.</p>	
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11	EMT 205	Mathematical Economics	2021	<p>CO1 Students can deal Mathematical calculation of static optimization, Application of Lagrange's method and also student can evaluate Differential Equations and with Economic Applications.</p> <p>CO2 Able to estimate and interpret Inter industrial relationships using Input-output analysis, also analyse maximization of profits and minimization of costs of the firms using Linear Programming method</p> <p>CO3 Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.</p> <p>CO4 Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market model with Stocks</p> <p>CO5 Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.</p>	
12	EMT 206	Human Values and Professional Ethics II	2021		

13	EMT 301	<i>Indian Economy</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources. Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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14	EMT 302	<i>Economics of Insurance</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicum in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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15	EMT 303	<i>Advanced Econometrics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Concepts of Heteroscedasticity & Multicollinearity. Possible reasons behind the presence of Heteroscedasticity & Multicollinearity. Skill to judge the reliability of estimation in case of violation of basic assumptions for the application of ordinary linear regression method.</p> <p>CO2 Concepts of Autocorrelation reasons behind the presence of Heteroscedasticity & Multicollinearity. Describe the variance/covariance matrix for the regression errors under the assumption that the errors are correlated</p> <p>CO3 Apply modern econometric methods covering time series analysis, financial econometrics, microeconometrics, macroeconometrics and structural econometric modelling;</p> <p>CO4 Interpret and critically evaluate applied economics research literature; demonstrate programming skills and numerical methods; and</p> <p>CO5 Apply methods learned to address policy and business decision questions.</p>	
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16	EMT 304	<i>Computer Applications and Data Analysis</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will get basic knowledge of computers i.e., block diagram, evolution of computer, input/output devices, storing information in computer etc.</p> <p>CO2 At the end of this course student will gain Examine spreadsheet concepts and explore the Microsoft Office Excel environment. Import and export data.</p> <p>CO3 Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas. Perform analysis tasks using Data analysis pack</p> <p>CO4 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyses and conclude using SPSS Package</p> <p>CO5 Finally, student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	
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17	EMT 305	<i>Public Finance</i>	2021	<p>.</p> <p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Understand the sources of finance both public and private, demonstrate the role of government to correct market failures and possible advantage of public financing</p> <p>CO2 Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.</p> <p>CO3 Understand the possible burden, benefits and distribution of various types of taxes among various classes of people, know the general trend and impact on general welfare and arouse them to suggest good and bad tax system.</p> <p>CO4 Understand the needs of public borrowing from all possible sources to meet necessary public investment/expenditures. Also be alerted to find sources for repayment</p> <p>CO5 Deliver effectively the preparation of budget and how they are passed in the house. Understand the changes in size and flexibility of state and central budget along with the role played by Finance Commission.</p>	
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18	EMT 306	<i>Financial Institutions and Markets</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2 Effectively narrate the kinds and components of money with its regulatory system, be aware of the functions, objectives and limitations of commercial banks.</p> <p>CO3 Identify the existence and development of non-banking financial institutions, know the important role of Mutual funds, LIC, investment companies etc., utilize and effectively participate in the development process.</p> <p>CO4 Understand the conditions of financial markets and its impact in the economy</p> <p>CO5 Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p>	
19	EMT 307	<i>Practical III</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will gain Examine spreadsheet. Work with pivot tables and charts. Create and edit charts. Learn to use functions and formulas.</p> <p>CO2 Perform analysis tasks using Data analysis pack using MS-Excel.</p> <p>CO3 Student gained and evaluate Econometric Methods such as OLS, LPM, Logistic regression analyse and conclude using SPSS Package</p> <p>CO4 Student will able to test of Multicollinearity, Heteroscedasticity and Autocorrelation.</p> <p>CO5 Student will be able to write programme for Simple statistical analyse and interpret through R-programming.</p>	

20	EMT 308	IntroductiontoEconometrics	2021	<p>CO1 students will have adequate competency in the frontier areas of economic theory and methods</p> <p>CO2 Use basic econometric estimation techniques such as Ordinary Least Squares to estimate bivariate and multivariate regression models.</p> <p>CO3 Decision about the statistical significance of individual explanatory variable and also over all model.</p> <p>CO4 Impacts for the violation of one of the important assumptions for application of OLS regression.</p> <p>CO5 Students will acquire additional specialization topics are estimation of system of equations, estimation of panel data models, generalized method of moments, discrete response models, censored regression models and estimation of average treatment effects.</p>	
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21	EMT 309	IndianEconomy	2021	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Students will develop ideas of the basic characteristics of Indian economy, its potential on natural resources.Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO2 Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. Students will obtain information regarding various agricultural issues in India and remedies for it</p> <p>CO3 Students will aware about recent economic affairs such as demonetization, universal basic income, cashless economy, skill and training development schemes, make in India etc</p> <p>CO4 Students will get benefit about various economic issues at local, national and global level.</p> <p>CO5 Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.</p>	
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22	EMT 310	EconomicsofInsurance	2021	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Demonstrate knowledge of insurance contracts and provisions, and the features of property-liability insurance, life and health insurance, and employee benefit plans.</p> <p>CO2 Demonstrate knowledge of the operation and management of insurance entities, and the economic implications of organizational design and structure.</p> <p>CO3 Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.</p> <p>CO4 Develop practical skills through professional development seminars, internships, and/or a practicums in insurance and risk management.</p> <p>CO5 Examine the role of public policy including social insurance in personal financial planning and risk management.</p>	
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23	EMT 401	<i>International Trade and Finance</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Identify the basic difference between inter-regional and international trade, understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>CO2 Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>CO3 Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.</p> <p>CO4 Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.</p> <p>CO5 Be aware of the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.</p>	
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24	EMT 402	<i>Environmental Economics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Realize the importance and influence of environment on the economy including the quality of manpower. Arouse their feelings to make cleaner environment so as to achieve harmonious development.</p> <p>CO2 Understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries.</p> <p>CO3 Demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean.</p> <p>CO4 Understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of resources, careless or unscientific dump/management of wastes.</p> <p>CO5 Suggest appropriate measures to correct environmental degradation, aware of those ingredients such as healthy climate, quality of human beings, domestic and other natural habitats and biodiversity levels, productivity and productions, sustainability, etc are all influenced by environment.</p>	
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25	EMT 403	<i>Applied Econometrics</i>	2021	<p>.</p> <p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Student will be able to develop a sound understanding of the core microeconomic concepts that economists use to understand the process of decision-making by an economic agent(s).</p> <p>CO2 The student should be able to apply mathematical tools and techniques to study behaviour of economic agents.</p> <p>CO3 Students will be able to identify strategic behaviour of economic agents and formulate them in a game theoretic framework.</p> <p>CO4 Student can explore Macro econometric models; Klein-Goldberger Model for USA, Agarwal, K. Krishna Murthy and N.V. A. Narasimhan Models.</p> <p>CO5 To gain knowledge in Applications of Single and Simultaneous Equation Models for macroeconomic variables.</p>	
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26	EMT 404	<i>Optimization Techniques in Economics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Knowledge of several models will enhance the applicability of the knowledge to actual data solving and getting appropriate conclusions.</p> <p>CO2 Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.</p> <p>CO3 This course will sharpen the quantitative skills of a student and help them understand applications of Operations research in varied fields like manufacturing, Finance, purchasing and procurement, assigning and allocation of resources for optimum result.</p> <p>CO4 Be able to design new simple models, like: CPM, PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.</p> <p>CO5 Students will be able to identify and develop operational research models from verbal description of real system.</p>	
27	EMT 405	<i>Time Series Econometrics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Students will acquire additional specialization through the Time series Econometrics Analysis.</p> <p>CO2 Skill to judge the reliability of estimation in case of Stationarity and Non-Stationarity test, Co-integration test.</p> <p>CO3 Forecasting with a single-equation linear regression model, and Forecasting with a multi-equation econometric model</p> <p>CO4 Student can evaluate Univariate Time Series Models like MA, AR, ARMA and ARIMA models.</p> <p>CO5 Student will be able to calculate VAR model which most important in macro-economic models.</p>	

28	EMT 406	<i>Practical IV Environmental Economics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Able to get application knowledge of statistical packages like SPSS, E-Views to apply economic data.</p> <p>CO2 At the end of this course student will gain practical knowledge of Time Series Analysis by using EViews.</p> <p>CO3 Student gained and evaluate Stationarity test by using ADF Test.</p> <p>CO4 After complete this course student will be able to test of Spurious Regression, Co-integration test and Granger Causality test.</p> <p>CO5 Finally, student will be able to make feasible solution in optimization.</p>	
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29	EMT 407	Project	2021	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Knowledge of several models will enhance the applicability of the knowledge to actual data solving and getting appropriate conclusions.</p> <p>CO2 Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.</p> <p>CO3 This course will sharpen the quantitative skills of a student and help them understand applications of Operations research in varied fields like manufacturing, Finance, purchasing and procurement, assigning and allocation of resources for optimum result.</p> <p>CO4 Be able to design new simple models, like: CPM, PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.</p> <p>CO5 Students will be able to identify and develop operational research models from verbal description of real system.</p>	
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30	EMT 408	<i>Optimization Techniques in Economics</i>	2021	<p>Course Outcomes: At the end of the course, the student will be able to</p> <p>CO1 Knowledge of several models will enhance the applicability of the knowledge to actual data solving and getting appropriate conclusions.</p> <p>CO2 Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.</p> <p>CO3 This course will sharpen the quantitative skills of a student and help them understand applications of Operations research in varied fields like manufacturing, Finance, purchasing and procurement, assigning and allocation of resources for optimum result.</p> <p>CO4 Be able to design new simple models, like: CPM, PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.</p> <p>CO5 Students will be able to identify and develop operational research models from verbal description of real system.</p>	
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31	EMT 409	DataBasefortheIndianEconomy	2021	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 Develop ideas of the basic characteristics of Indian economy, its potential on natural resources</p> <p>CO2 Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.</p> <p>CO3 Students can able to describe the knowledge or skills students should acquire by the end of a particular assignment, class, course, or program, and help students understand why that knowledge and those skills will be useful to them</p> <p>CO4 Creating new knowledge (Cognitive) Developing feelings and emotions (Affective) Enhancing physical and manual skills (Psychomotor).</p> <p>CO5 Students can also be scaffolded so that they continue to push student learning to new levels in any of these three categories.</p>	
32	EMT 410	ActuarialStatistics	2021	<p>CourseOutcomes:Attheendofthecourse,thestudentwillbeableto</p> <p>CO1 To learn and gain the knowledge about the impact of economic and social conditions in the financial sector.</p> <p>CO2 To create awareness about the financial terminology and calculations in the policy designing</p> <p>CO3 To skill development and honed by successful actuaries include an excellent business communications in sense with knowledge of finance, accounting, and economics.</p> <p>CO4 Actuaries often required keen analytical and problem solving skills using mathematics and statistics.</p> <p>CO5 Actuaries can ability to work with reliability and relevance by using the analytical and scientific reports generated by the researchers</p>	

7. Economics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ECO-101 & 201	Micro Economics Analysis – I & II	2021-22	<ol style="list-style-type: none"> 1. Graduate Consulting Analyst. Graduate Recruitment Bureau. 2. Economic Consultant (Public Policy). 3. NERA Internship -Industry Research Analyst. Research Fellow. 4. Graduate Economic Consulting Internship, Economist, Customer Experience Strategy.
2	ECO-102 & 202	Macro Economics Analysis – I & II	2021-22	<ol style="list-style-type: none"> 1. Work for a central bank of financial institutions. 2. Work as a consultants. 3. work in banking sector.
3	ECO-103&203	Public economics &Federal Finance	2021-22	<ol style="list-style-type: none"> 1. Assistant commercial Tax Officers. 2. Industrial finance officers. 3. Bill collectors.
4	ECO-104&204	Mathematical Methods in Economics – 1and Statistical Methods in Economics	2021-22	<ol style="list-style-type: none"> 1. Assistant Statistical officers. 2. Bossiness firm consultant. 3. Market research Analyst. 4. Financial analyst. 5. Investment manager. 6. International trade specialist.
5	ECO 105(a)	Fundamentals of Computer	2021-22	<ol style="list-style-type: none"> 1. Digital Assistants. 2. Office Computer operators.
6.	ECO 105(b)	Urban Economics	2021-22	<ol style="list-style-type: none"> 1. Senior urban economist. 2. International urban Economist. 3. Senior program Research analyst. 4. Urban environmental impact officer.
7.	ECO 105(c)	Welfare Economics	2021-22	<ol style="list-style-type: none"> 1. Policy maker. 2. Administrator. 3. Welfare officer in Sachivalyam. 4. Admin in Sachivalayam.

8.	ECO 106(a)	Economics of Environment	2021-22	<ol style="list-style-type: none"> 1. Environmental pollution officer. 2. Environmental consultants. 3. Environmental pollution planning and consultants. 4. Environmental conservation / Advocacy.
9.	ECO 106(b)	Demography	2021-22	<ol style="list-style-type: none"> 1. National Sample Survey officers. 2. Census Survey Officers. 3. Chief planning officers.
10.	ECO 107	Human Values and Professional Ethics -I	2021-22	<ol style="list-style-type: none"> 1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
11	ECO 205(a)	International Trade: Theory and Policy	2021-22	<ol style="list-style-type: none"> 1. International trading officers. 2. Export and import Officers. 3. Shares consultants. 4. Commercial desk manager. 5. Global trade Advisory.
12	ECO 205(b)	Economics of Infrastructure	2021-22	<ol style="list-style-type: none"> 1. Analyst Infrastructure investment and associate. 2. Assistant director Infrastructure investment division. 3. Manager Infrastructure delivery.
13	ECO 205(c)	Introduction to Information Technology	2021-22	<ol style="list-style-type: none"> 1. Computer operator. 2. Programming officer. 3. Web designing. 4. Creation of application.
14	ECO 206(a)	Basic Econometrics	2021-22	<ol style="list-style-type: none"> 1. SAP Technology Consultant. 2. Market risk analyst.
15	ECO 206(b)	Economics of Tourism	2021-22	<ol style="list-style-type: none"> 1. Tourist guides. 2. Tourism development officers.

				<ul style="list-style-type: none"> 3. Adventure Guide. 4. Travel Consultants.
16	ECO 207	Human Values and Professional Ethics -II	2021-22	<ul style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
17	ECO 301	Economics of Growth and Development	2021-22	<ul style="list-style-type: none"> 1. Project Coordinator. 2. Recreation manager. 3. Programme Director. 4. Social and community manager.
18	ECO 302	Indian Economy	2021-22	<ul style="list-style-type: none"> 1. NSSO. 2. Economic Survey directors.
19	ECO 303 (a)	International Finance	2021-22	<ul style="list-style-type: none"> 1. Financial Advisors. 2. Financial officers.
20	ECO 303 (b)	Production Economics and Farm Management	2021-22	<ul style="list-style-type: none"> 1. Farm Development mangers. 2. Marketing consultants. 3. Dairy development coordinators.
21	ECO 303 (c)	Industrial Economics	2021-22	<ul style="list-style-type: none"> 1. Industrial relation officers.
22	ECO 303 (d)	Women and Economic Development	2021-22	<ul style="list-style-type: none"> 1. Velugu community coordinators. 2. Mandal book Keepers. 3. Assistant project managers. 4. DRDA Coordinators.
23	ECO 304	Communication and Soft Skills	2021-22	<ul style="list-style-type: none"> 1. Skill development coordinators. 2. Public relation officers. 3. Marketing and Advertising. 4. Media. 5. Meeting and event planning.
24	ECO 305 (a)	Andhra Pradesh Economy	2021-22	<ul style="list-style-type: none"> 1. NSSO. 2. AP Economy Survey Directors
25	ECO 305 (b)	Agricultural Economics	2021-22	<ul style="list-style-type: none"> 1. Agricultural officers.

				<ol style="list-style-type: none"> 2. Agricultural field officers. 3. Banking field officers. 4. Agricultural product and marketing coordinators.
26	ECO 401	Rural Development	2021-22	<ol style="list-style-type: none"> 1. MGNREGA Programme officers. 2. District Coordinators. 3. Institutional building officers.
27	ECO 402	Financial Institutions and Markets	2021-22	<ol style="list-style-type: none"> 1. Corporate finance. 2. Financial planning officers.
28	ECO 403 (a)	India's Economic Reforms	2021-22	<ol style="list-style-type: none"> 1. Planning & Development Officers
29	ECO 403 (b)	Entrepreneurship and Skill Development	2021-22	<ol style="list-style-type: none"> 1. Business consultant. 2. Research and development. 3. Recruiter. 4. Sales managers.
30	ECO 403 (c)	Labour Economics	2021-22	<ol style="list-style-type: none"> 1. Labour officers. 2. Labour relations officers. 3. Labour relations assistant. 4. Construction estimators
31	ECO 403 (d)	Economics of Insurance	2021-22	<ol style="list-style-type: none"> 1. Insurance Agents. 2. Loan processor. 3. Loss control officers. 4. Risk managers.
32	ECO 404	Human Resource and Sustainable Development	2021-22	<ol style="list-style-type: none"> 1. Human resource assistant. 2. Benefits administrator. 3. Training manager. 4. Compensation specialist. 5. Employee relations manager.
33	ECO 405 (a)	Human Resource Development	2021-22	<ol style="list-style-type: none"> 1. Human resource recruiter. 2. Performance management and development. 3. Employees training officers. 4. Organizational development officers.
34	ECO 405 (b)	Planning in India and Indian Economy	2021-22	<ol style="list-style-type: none"> 1. Municipality planning officers. 2. Planning coordinators.

9. Education

10. English

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1)	101:	Poetry-I	2021	<ul style="list-style-type: none"> • An understanding of the evolution of English poetry across ages. • May inspire poetic creativity 	
2)	102:	Drama-I	2021	<ol style="list-style-type: none"> 1.Perceive the nuances of performance 2.Recognize the transformation of human experiences into dramatic experiences. 	
3)		:Fiction-I	2021	<ol style="list-style-type: none"> 1. Aesthetic and literary merits of the novel 2. The conditions of the age and the influence 	

4)	104	:Prose-I	2021	<ol style="list-style-type: none"> 1. Understand the genre of essay 2. Imbibe the deeper human values implied in the essay. 	
5)	106:	Human Values and Professional Ethics-I	2021	<ol style="list-style-type: none"> 1. Realize the necessity of practicing Human values and Ethics in all walks of life including the profession they opt for 2. Understand Bhagvad Gita as a guide for modern lifestyle 	
6)	201	:Poetry-II	2021	<p>Sensitizes the students on the classical and contemporary poetic ethos</p> <p>Raises student awareness on movements like Modernism, War Poetry, Women's poetry, Symbolism etc,</p>	
7)	202	:Drama-II	2021		
8)	203	:Fiction-II	2021	<ol style="list-style-type: none"> 1. The great works of major novelist of modern age 2. The ability to understand the technique of the Novel 	

9)	204	:Prose-II	2021	<p>After the completion of the course the students are able to</p> <ol style="list-style-type: none"> 1. Know the working mechanism of Feminism and socialism 2. Know the mind and strategies of Victorian essayists 3. Know the importance of culture in the lives of Victorian people <p>Know the importance of being human in their dealings with the fellow beings</p>
10)	205:	English Language Teaching	2021	<ol style="list-style-type: none"> 1. Understand the importance of language lab, teaching materials and audio-visual aids in the learning and teaching of English. 2. Know to test and testing components of language tests and examinations and evaluation procedures
11)	301	: Indian English Literature-I	2021	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the merits of Indian English writings and drawbacks if any
12)	302:	American Literature-I	2021	<ol style="list-style-type: none"> 1. An idea of English literature in America 2. Familiarity with the literary movements 3. Knowledge about concepts like Puritanism, transcendentalism, symbolism, impressionism etc

13)	303:	Literary Criticism-I	2021	<p>Equips the student with the evolution of English Literary Criticism from Aristotle to early twentieth century</p> <p>Helps students map the genealogy of Western canonical critical texts</p>
14)	304 (A) 304(B): 304 (C): 305 (D):	<p>:Comparative Literature</p> <p>Short Story</p> <p>Women's Writings</p> <p>Indian Literature in English</p>	2021	<p>1. Understand national and world literatures and the need of comparative studies in the global world.</p> <p>2. Understand the ways of comparative analysis</p> <p>OUT COMES:</p> <p>Perceives creativity as a tool of empowerment and unity amongst women.</p> <p>Understand gendered spaces in creativity and the genealogy of women's writings like Indian, African American, French etc.</p>
15)	305 (A):	Communicative English	2021	<p>.Understand the significance and importance of Communication in English in the present day world</p> <p>1. Understand communication process, the different types and barriers of communication</p>

16)	305(B):	English for Media	2021	<ol style="list-style-type: none"> 1. Understand the use of language in different situations in writing for the media 2. Learn the oral skills necessary for media like interview skills
17)	05(C):	3An Introductory Course to Literature	2021	<ol style="list-style-type: none"> 3. Understand the use of language in different situations in writing for the media 4. Learn the oral skills necessary for media like interview skills
18)	401:	Indian English Literature-II	2021	<ol style="list-style-type: none"> 1. Understand the Indian English writings and movements associated with it in India 2. Understand the poetic features of Indian English poetry
19)	404(A): 404(B): 404(C): 404(D):	Translation: Theory and Practice Subaltern Studies Post-Colonial Literatures World Classics in English Translations	2021	<ol style="list-style-type: none"> 1. Know the concepts of dalitism, feminism, marginalism and Subaltern aspects with relevant theories 2. Appreciate and understand the struggles and sorrows of subalterns

20)	405(A): 405(B): 405(C):	Soft Skills Indian Literature in English Translation Contemporary Translation Studies	2021	1. Will learn about morals and responsibilities 2. Learn to acquire the enduring values embedded in the great literary works of our writers	
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11. Linguistics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development	
1	105C	Structure of Language(Telugu/English)	2021	i.Understanding characteristics of language (Telugu/English). ii. Skill development in phonology and morphophonemics in language (Telugu/English) iii.The students are able to understand morphology and syntax of language (Telugu/English)	
2	106A	Human Relations	2021	i.Understanding the introduction of human relations. ii.The students are enriched in the factors of effecting human relations and learnt about skills of human relations. iii.Understanding human relations theory of management and industrial relations.	

3	106B	Instructional Technology	2021	<p>i.Learnt about meaning nature, definition, scope and importance of IT.</p> <p>ii. The students gained knowledge types of IT in class room and improvement of teaching and learning.</p> <p>iii.The study will help the students to understand different education for platforms in IT.</p>	
4	206C	Literacy, Language Curriculum and Testing	2021	<p>i.Understanding literacy as communication skill, language acquisition and language learning theories.</p> <p>ii. Identify the development of IPCL material for adult literacy teaching.</p> <p>iii. The students will learn principles and methods of language testing.</p>	
5	303C	Neuro-linguistics	2021	<p>i. Understanding anatomy of brain, language and speech and linguistic basic units.</p> <p>ii. The students will able to understand history of Neuro Linguistics.</p> <p>iii. Skill development is speech and language disorders and testing techniques.</p> <p>.</p>	
6	304	ICT for Enriching Teaching and Learning Skills	2021	<p>i.The allows students to take consideration about concepts, importance of ICT.</p> <p>ii.Skill development in computer networking and teaching learning experiences enriched with ICT.</p> <p>iii.Skill development on e learning OER, Web 2.0 technologies etc.,</p>	

7	403C	Language Planning	2021	<ul style="list-style-type: none"> i. Understanding nature and scope of language planning and communication technology. ii. Identify the process and problems of language planning. iii. Understanding types and treatment of language planning. 	
8	404	Multidisciplinary Capacity Building	2021	<ul style="list-style-type: none"> i. Understanding health and environmental studies. iii. Identify concept of road safety, concept of physical education and concept work experience. iii. The students will enrich in art education, place of visual and performing arts in teaching, art and craft Indian festivals and its artistic significance. 	

12. Hindi

13. History

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant document
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1	History 101	HISTORY OF INDIA UPTO 650 A D	2021	<p>1.Students will have a familiarity with the sources, different political, social, economic, cultural and religious traditions of the Indian subcontinent upto 650 C.E.</p> <p>2.Student will also be well versed with different analytical approaches and models of interpretation.</p>	
2	History 102.	: History of Indian Polity and Economy, 1206-1757	2021	<p>1. Discuss Indus Valley and Vedic Civilization</p> <p>2. Students will understand Polity and economy from the Mauryas to Pallavas</p> <p>3. Discuss Guptas, Chalukyas, Vakatakas.</p>	
3	History 103	History of Modern India, 1757-1947	2021	<p>1. Discuss World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism.</p> <p>2. Students will understand International Relations during 1919-39</p> <p>3. Discuss World War II and its impact</p>	
4	History 104	History of Modern World, 1900-1945	2021	<p>1.Student can gain the knowledge on the history and consequences of the World between two World Wars pertaining to League of Nations, Great Depression, Nazism, and Fascism.</p> <p>2.Students will understand International Relations during 1919-39.</p> <p>3.Students can understand thoroughly about the</p>	
5	History 105	History of Andhras, Up to 1336 AD	2021	<p>1. Discuss Nature and Scope of Tourism</p> <p>2. Will understand Elements of Tourism</p> <p>3. Discuss Tourism Organization and Promotion</p>	

6	History 106a	Theoretical Concepts of Tourism	2021	<p>1.The students can gain fair understanding about the fundamentals of tourism and its basic concepts.</p> <p>2.The students can acquire professional knowledge to get opportunity in tourism industry.</p>	
7	History 401	Historiography	2021	<p>1.It provides a critical overview of one of the most dynamic areas of modern historical inquiry—global history.</p> <p>2.The students can familiarize with historical studies, approaches theories and methods used in the practice of history writing.</p>	
8	History 402	Contemporary History Of India - II	2021	<p>1.Students were able to understand the Functioning of Parliamentary Democracy in India</p> <p>2.Acquire knowledge on Emergency and its Aftermath</p> <p>3.Able to assess the significance of Economic Reforms since 1991</p>	
9	History 403a	International Relations And Organizations	2021	<p>1.Students can possess knowledge on the Concept of International Relations</p> <p>2.Were able to understand Balance of Power</p> <p>3.Can gain knowledge on International Organizations</p>	

10	History 403b	Constitutional History of India, 1773-1950	2021	<p>1.The course helps the students to gain require knowledge on the enactment of various acts introduced by the British</p> <p>2.Students will also understand the impact of the legislations, National Agitations and its Prospective.</p>
11	History 403c	History of Modern Asia 1868-1960	2021	<p>1.Students can possess knowledge on Japanese Imperialism.</p> <p>2.Will understand Emergence of Modern Korea and Modern West Asia</p>
12	History 403d	History of Modern Latin America	2021	<p>1.Students will be identify struggles for Independence in Latin America</p> <p>2.They will understand the politics of the Western Powers in Latin America..</p>
13	History 404	History Of Science And Technology In India 1858- 1947	2021	<p>1.This paper will make the students to understand how far Science and Technology has progressed in India and resulted in bringing Socio-Economic changes in the Society.</p>
14	History 405a	Outlines of Andhra History and Culture	2021	<p>1.The study of comprehensive history of the country is incomplete without the study of regional history.The external discipline students can develop thorough understanding on Andhra history and culture.</p>

15	History 405b	Health, Medicine And Society In Modern India	2021	1.Possess knowledge and awareness about the Public health 2.Able to understand the Western and Indigenous Medical systems.
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14. Human Rights and Social Development

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HR 101	Human Rights: Concepts and Theoretical Perspectives	2021	<ol style="list-style-type: none"> 1. To Expose the students about nature and concept of Human Rights. 2. To apprise the students about the Liberal. Marxian perspectives. 3. To expose the students that alternative, third world and Indian Perspectives of Human Rights,
2.	HR 102	Human Rights in India the constitutional and Legal Framework	2021	<ol style="list-style-type: none"> 1. Students to know the Indian Constitution and Human Rights. 2. To understand the Judiciary and Human Rights. 3. To understand about Criminal Justice system in India.

3.	HR 103	Human Rights and Duties Education	2021	<ol style="list-style-type: none"> 1. To expose students about the importance of Human Rights and Duties education. 2. To apprise the students about the target groups for Human Rights <p>To expose the students about the content of Human Rights Education.</p>
4.	HR 104	Rights and the implementation Machinery	2021	<ol style="list-style-type: none"> 1. To expose the students about the implementation machineries at National Level and International Level. 2. The students understand about how the problems in Accessing Justice through Courts and Tribunals. 3. To expose the students that statutory bodies of Human Rights.
5.	HR 105 A	Working Class and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. <i>To understand the students about the status of working class, concept and issues.</i> 2. <i>To expose the student about the basic rights and duties of various sections.</i> 3. <i>To understand the Indian Constitutional Frame work.</i>
6.	HR 105 B	Human Rights Education, Teaching and Training	2021	<ol style="list-style-type: none"> 1. To expose the student about the origin, UNO and Human Rights education policies. 2. To apprise the students about the principles and practice in teaching of Human Rights Education. 3. To understand the student about training aspects of Human Rights.

7.	HR 106 A	Human Rights Activism and Role of NGOs	2021	<ol style="list-style-type: none"> 1. To expose the students about the different types of Human Rights Activisms. 2. To identify the student that the different Types of NGO's and their role for promoting the Human Rights.
8.	HR 106 B	Social Movements and Human Rights in India	2021	<ol style="list-style-type: none"> 1. To expose the students about the role of NGOs for protecting human rights. 2. To Understand the student about the Political Movements, Ecological and Environmental Movements of Human Rights. 3. To apprise the student about the various types of Social and Political Reforms of Human Rights.
9.	HR 107	Human Values and Professional Ethics - I	2021	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i> 3. <i>To assess the student about various Crime and Theories of punishments</i>
10.	HR 201	Human Rights and Indian Polity	2021	<ol style="list-style-type: none"> 1. To expose the students about the concept of basic structure of Indian Polity, administrative structure in India. 2. To apprise the student about the role of People's Agencies for protecting and promotion of human rights in India. 3. To understand the students about the Legislative Procedure and implementation process in India.

11.	HR 202	Emerging Dimensions of Human Rights	2021	<ol style="list-style-type: none"> 1. To expose the students about the Human Rights and Duties of Non-State Armed Groups and Commercial Corporations. 2. To understand the students about the rights of future generation. 3. To apprise the students about the Human Rights and Changing Dimension of State Sovereignty and Humanitarian' Intervention.
12.	HR 203	Human Rights: The International Context	2021	<ol style="list-style-type: none"> 1. To understand the students about the evolution of human rights and UN charter of human rights. 2. To expose the students about regional dimensions of human rights and special conventions on human rights. 3. To understand the students about International conventions on human rights and duties.
13.	HR 204	Research Methodology, Statics and Computer Applications	2021	<ol style="list-style-type: none"> 1) Student to Know Scope of Social Research. 2) To Understand Data Analysis. 3) Understand About Types of Data Collections
14.	HR 205 A	Human Rights – The Socio Economic Context	2021	<ol style="list-style-type: none"> 1. To expose the students about the socio, economic background of human rights. 2. To apprise the students about human rights of vulnerable groups. 3. To understand the students about the basic human

				need for development with respect to human rights.
15.	HR 205 B	Societal Problems of Human Rights in India	2021	<ol style="list-style-type: none"> 1. To understand the student about the societal problems of human rights. 2. To understand the students about the social problems of minorities, scheduled caste and scheduled tribes. 3. To expose the students about Regionalism, terrorism.
16.	HR 206 A	Human Rights and Criminal Justice System	2021	<ol style="list-style-type: none"> 1. To expose the students about Rights of Inmates of Prisons and Custodial Homes. 2. To understand the students about the Right to Legal Aid, Access to Justice and Speedy Justice. 3. To expose the students that the problems of human rights.
17.	HR 207	Human Values and Professional Ethics - II	2021	<ol style="list-style-type: none"> 1. <i>To expose the student about the concept and nature of human values.</i> 2. <i>To understand the student about nature of Values, Ahimsa and various religion theories.</i> 3. <i>To assess the student about various Crime and Theories of punishments.</i>
18.	HR 301	Social Movements and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To expose the student about conceptual perspectives of social movements and human rights. 2. To apprise the students about the social, political and religious reforms movements and human rights.

				3. To expose the students that the role of International and National Institutions in promoting Human Rights.
19.	HR 302	Science, Technology, Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. Understand the basic concept in science and technology and also about Indian perspective on science and technology. 2. Ability to know about the Right to Adequate Food, Agricultural, Biotechnology Impact of on Agriculture, Food Biotechnology and Revolution in Information Technology. 3. Analyse know rights to health and application of Biotechnology in Medicine and also about Intellectual Property Rights. 4. Assess the use of natural resource Environmental Biotechnology and Use Technologies
20.	HR 303 A	Human Rights and Duties – Advocacy and Extension work and Viva-Voce	2021	<ol style="list-style-type: none"> 1. To understand the students that the issues for peoples movements and public advocacy on human rights and duties 2. To understand the students on extension work with respect to human rights. 3. To understand the students about the uses of NGOs fact finding and uses of information media.
21.	HR 303 B	Socially/Economically Disadvantaged people and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To expose the students about the concept of the Constitutional Safeguards and Special Protection Laws and

				<p>Policies.</p> <p>2. To understand the students about the concept of the disadvantaged people in the Indian Society.</p> <p>3. To understand the students about the Institutional Mechanisms for protecting the human rights of the disadvantaged groups.</p>
22.	HR 303 C	Human Duties and Responsibilities	2021	<ol style="list-style-type: none"> 1. To understand the student about the concept of human duties and responsibilities. 2. To expose the student about human values and values of humanism. 3. To apprise the students about evaluation of human duties.
23.	HR 303 D	Children and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To understand the student about the concepts of Child Labour and protecting norms at National and International level. 2. To apprise the student that the status of children in Indian society with respect to human rights. 3. To understand the students about the National and International mechanisms for protecting the child rights.
24.	HR 304	Soft Skills	2021	<ol style="list-style-type: none"> 1. To understand the student that the concepts of soft

				<p>skills with respect to human rights.</p> <ol style="list-style-type: none"> To understand the student in employability skills in human rights aspects. To expose the students that the professional skills for team building and problem solving.
25.	HR 305 A	Historical and Philosophical Perspectives of Human Rights	2021	<ol style="list-style-type: none"> To expose the student that the a basic understanding to the concepts of human rights, human values, dignity, justice and equality. To understand the students that the theories of human rights in various inter disciplinary dimensions. To apprise the student that the concept of Magna Carta-Bill of Right-French and American-Declaration and Uncharted on human rights.
26.	HR 305 B	Human Rights and Duties in India	2021	<ol style="list-style-type: none"> To understand the students about the concepts of Constitutional Human Rights and Responsibilities. To apprise the students that Extra-ordinary situations and human rights in India. To understand the violations of rights in present Civil Society in India.
27.	HR 401	Human Rights in Andhra Pradesh	2021	<ol style="list-style-type: none"> To expose the students about various Human Rights Movements at National and State Andhra Pradesh) Level. To understand the concept of social stratification and problems of Caste and Un-touchability. To expose the students that the gender inequality

				and various gender violation in Andhra Pradesh.
28.	HR 402	Development, Trade and Human Rights	2021	<ol style="list-style-type: none"> 1. To understand the student about the concept of human rights of various vulnerable groups at National and International level. 2. To apprise the student about the Trade related human rights violations and Trade development. 3. To understand the student about the role of human rights in development.
29.	HR 403 A	International, Humanitarian and Refugee Laws	2021	<ol style="list-style-type: none"> 1. To expose the students about the concepts of International Humanitarian Law and Implementation enforcements of IHL. 2. To apprise the student about the concept of International Refugee Law and protection under International Law. 3. To understand the students about solution to Refugee Problem.
30.	HR 403 B	Environment and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To expose the student about the concept of Environment and rights to clean environment. 2. To apprise the students about the International regimes for protection. 3. To understand the students about the role of various agencies for protecting environment with respect to human rights.
31.	HR 403 C	Human Rights and Criminal Justice System	2021	<ol style="list-style-type: none"> 1. To expose the student about the concept of the International Human Rights systems. 2. To understand the student about the International

				Organisations for protecting the Human Rights. 3. To understand the students about the UN Organs and Human Rights.
32.	HR 403 D	Minorities and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To student understand that the concept of evolutionary perspectives and Institutional mechanisms for protection of Minorities. 2. To expose the student that rights and duties of Minorities under in the Indian System. 3. To apprise the student that the Minorities and human rights challenges.
33.	HR 405 A	Development, Globalization and Human Rights	2021	<ol style="list-style-type: none"> 1. Understand to role of Human Rights in Development and various theories of development. 2. Analyses the new international Economic Order (NIEO), WTO GATT and International Trade and Human Rights Perspective in India. 3. Evaluvate the Globalisation and its impact on agriculture, environment, labour, women, culture and health. 4. Know about the Transnational

				Corporations (TNCs) and Human Rights violations and Impact of GATT-WTO on sovereignty.
34.	HR 405 B	Women and Human Rights and Duties	2021	<ol style="list-style-type: none"> 1. To expose the students about the concept or the status of women in various sectors with respective human rights. 2. To expose students about the National and International norms for protection at International and National level. 3. To apprise the students about the Institutional mechanisms for Protection of rights of women.

Human Rights and Duties

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	HR – 105 (B)	Human Rights Education, teaching and Training	2021	Labour welfare has for long been one of the crucial areas of human rights and duties divided into nine units. This paper deals with conceptual issues, status of the working class, workers rights and duties, emerging problems, conflicting rights, international standards, Indian framework, and enforcement agencies.	Enclosed (1.1.3)

	HR – 106 (A)	Human rights activism and role of ngos	2021	NGO – Meaning, Nature and Importance – Aims and Objectives – Characters of Human Rights NGOs – Types, Establishing the NGOs Board of Directors – Develop the NGOs Bye-laws – Register the NGO – Funding and Fund - Raising – Office Management	
2	HR – 106 (B)	Social movements and human rights in india	2021	This paper aims at a sociological study of human rights and duties in India. Through five units, it encompasses a conceptual perspective, impact of social and religious reforms movements and human rights, political and ecological movements and human rights, and the role of international and national institutions in promoting human rights.	
3	HR – 205 (B)	Societal problems of human rights in india	2021	Societal problems of human rights are sought to be dealt with through five units. They encompass concept and approaches, and a special focus on social, economic, political, health and cultural problems that underlie human rights deprivations in Indian society.	
4	HR – 206 (B)	Media and human rights	2021	Various forms of media – Print, Electronic (Broadcast), Art media – radio, television, internet	
5	HR – 303 (C)	Human duties and responsibilities	2021	Moral / Ethical; Social / Economic; Legal / Political; Traditional / Modern; Eternal / Universal; Changing Dimensions	

6	HR – 303 (D)	Children and human rights and duties	2021	<p>ILO conventions on restrictions and prohibition on child labour including ILO convention on Child Labour 1999.</p> <p>UN Convention on the Rights of the Child 1989, Optional Protocol on Sale of Children, Child Prostitution and Child Pornography 2000, Declaration of Social and Legal Principles relating to the Protection and Welfare of Children with Special Reference to</p>
7	HR – 304	Soft skills	2021	<p>Soft Skills: Meaning and Importance - Hard Skills versus Soft Skills - Self Concept: Self - Awareness, Self Development and Self Realization – Power of Positive Attitude – Etiquette and Manners.</p> <p>Listening: Types of Listening, Effective Listening and Barriers to Listening – Assertive Communication</p>
8	HR – 405 (B)	Women and human rights and duties	2021	<p>Fundamental Rights and directive principles under the constitution</p> <p>Special provisions for the protection of women : Article 15(3), Article 39(d) & (e), Article 243-D & 243-T.</p> <p>Land –mark judgments.</p>

15. Law

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1	CO -101	Mass Media Law	2021	<ul style="list-style-type: none"> a. Have a detailed and sophisticated understanding of the general principles governing freedom of speech, the public interest and the media; b. Have a detailed, technical and specialised understanding of the constraints imposed on the media in the reporting of court proceedings; c. Have developed the ability to independently understand, research and critically analyse legal and scholarly developments that contribute to professional practice in the area of media law; and d. Have a detailed, technical and specialised understanding of defamation law in India and comparatively; e. Have developed expert knowledge of the practical operation of defamation law in India and comparatively;
2	CO-102	Public Utilities Law	2021	<ul style="list-style-type: none"> a. government policy in regard to such utilities in general and to each utility in particular, b. The growth and evolution of the public utilities; c. patters of the laws of incorporation and d. powers, functions and liabilities of the public utilities vis-a-vis their employees, consumers and others.
3	CO- 103	Law and Social Transformation in India	2021	<ul style="list-style-type: none"> a. Critically analyse the Law as an instrument of social change and product of tradition and culture b. Explore the nature and function of Law as an institution and process interlinked with the social and economical philosophy of education. c. Examine development of law from historical processes and how for the a touch of modernization and value can be added to legal system d. To analyse the different approaches of Law and

				Justice
4	CO - 104	Indian Constitutional Law: The New Challenges	2021	<ul style="list-style-type: none"> a. Understand and interpret Constitution to address the emerging complex issues; b. Explore the various functional theories, doctrine and Constitutional principles working in the backdrop and its interplay with the emerging issues; and c. Examine the boundaries, limitations, of Constitution from different perspectives and explore the possible approaches of interpretation and understanding from the perspective of Law and Justice.
5	CO - 201	Union – State Finance Relations	2021	<ul style="list-style-type: none"> a. To understand India as development of complex federal structure (Quasi) federal and its strength and weaknesses; b. Explore the various functional theories, doctrine and Constitutional principles of federalism and its interplay under Indian Constitution; and c. To examine the area of conflicting interest between Union and State and primacy of Union over the State.
6	CO - 202	Constitutionalism, Pluralism and Federalism	2021	<ul style="list-style-type: none"> a. To explore the basic principles of Constitutionalism, different model of federalism and its interplay in the Indian legal system; b. To examine the adoption of, utility and justification of Constitutional model in India; and c. To analyse India as pluralist society and suitability of various model, approaches in India in functional aspects of comparison with other legal system.
7	CO – 203	Judicial Process	2021	<ul style="list-style-type: none"> a. Intended to highlight the role of court as policy maker, participant in the power process and as an instrument of social change. b. expose the intricacies of judicial creativity and the

				<p>judicial tools and techniques employed in the process.</p> <p>c. Since the ultimate aim of any legal process or system is pursuit of justice, a systematic study of the concept of justice and its various theoretical foundations is required.</p> <p>d. Intends to familiarise the students with various theories, different aspects and alternative ways, of attaining justice.</p>
8	CO – 204	Legal Education and Research Methodology	2021	<p>a. Critically analyse the various research skill, especially in the field of law;</p> <p>b. To develop the skill of application of teaching methods in legal education</p> <p>c. To understand and analyse the various strength and weakness of teaching learning and research process for the field of law; and</p> <p>d. To develop the skill of utilising computer technology for Legal education and Legal research.</p>
9	CO – 301	Human Rights	2021	<p>a. Acknowledge the social and economic rights of workers, forced labour, child labour, bonded labour, slavery, trade union, social security, right to health, standard of living, protection of families etc.</p> <p>b. To gain and acquire the knowledge about cultural rights of indigenous population.</p> <p>c. Understand the third-generation solidarity right of various populations.</p> <p>d. Acknowledge the ideas and knowledge about Human right Protection system of United Nations in the light of Covenant of Civil and Political rights.</p>
10	CO – 302	National Security, Public Order and Rule of Law	2021	<p>a. Understand and interpret various provision and safeguards to protection national security;</p>

				<ul style="list-style-type: none"> b. To explore the various approach of public order, importance of rule of law and different legislations; c. Balancing the civil liberties and power of state; and d. Explore the various functional institution like election commission, parliament and check and balance on the national importance.
11	CO- 303	Practical Training	2021	<ul style="list-style-type: none"> a. Critically apply the understanding and application of legal research principles to legal research writing; b. To explore the various stages and its application for the practical record work; c. To have the development of idea, and its application; d. To have the ability to provide the original and non-plagiarised work to the existing field of knowledge e. Legal aid Camps and Legal Literacy Programmes, Court Observation work. f. On the completion of the course students will develop an inclination towards research and academics.
12	CO- 304a	Environment Protection and The Law	2021	<ul style="list-style-type: none"> a. Study the relationship between environment and climate change as well as the role of law, judiciary, resolution mechanisms but the alternate energy solutions and how people are dealing with climate changes, environmental laws and implementation of available solutions.
13	CO- 304b	Intellectual Property Rights Law	2021	<ul style="list-style-type: none"> a. To give philosophical underpinnings of traditional notion of property and IP • b. To examine the link between Industrial development & IP protection • To examine the conceptual development of IP concepts through judicial approach •

				<ul style="list-style-type: none"> c. To examine the impact of IP on economy, health and daily activities • d. To understand the basic principles enunciated in international agreements relating to IP
14	CO- 401	Dissertation and Viva-Voce	2021	<ul style="list-style-type: none"> a. Identify key research questions within the field of Demography on which you will carry out independent research. b. Manage your time effectively whilst working on your independent research. c. Demonstrate appropriate referencing and develop skills in other aspects of academic writing. d. Demonstrate knowledge and understanding of report writing. e. Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research
15	CO – 402a	Law of Consumer Protection	2021	<ul style="list-style-type: none"> a. Define provision under the Consumer Protection and Right to Information Act and apply them to situations accordingly b. Draft a consumer complaint with ease c. Confidently approach a Consumer Forum and get aware of the redressal mechanism d. To expose the students about Consumer Protection Laws; e. To develop the conceptual understanding of Consumer Protection regime.
16	CO- 404 b	International Human Rights (MOOC / ONLINE COURSE)	2021	<ul style="list-style-type: none"> a. Analyze and comment on key controversies surrounding the development of international human rights law b. Use conceptual tools to follow the developments of human rights law

				c. Be most effective in contributing to the enforcement of international human rights law
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16. Library and Information Science

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	LIS-101	Foundation of Library and Information Science	2021	1. Know the various types of libraries and their role in the society 2. Learn the Professional ethics and library Legislation in India 3. Understand LIS education in India and various library associations in India
2	LIS102	Knowledge Organization: Classification Theory	2021	1.. Understand the definition, need and purpose of classification 2. Learn the Fundamental Categories, Facet Analysis, types of Isolates in all schemes of classification 3. Understand the Notation, trends and developments in Classification
3	LIS-103P	Knowledge Organization: Classification Practice	2021	1.Learn the Dewey Decimal Classification Scheme 2. Get the skill regarding assigning the class numbers 3.Have knowledge on Tables and Schedules of DDC
4	LIS-104	Knowledge Management	2021	1.Get an idea on the concepts of knowledge

				<p>management, types of knowledge</p> <p>2.Understand the knowledge creation models, knowledge transfer in E-World</p> <p>3.know the tools for knowledge management and neural network and datamining</p>
5	LIS-105 (A)	Introduction to Information Technology	2021	<p>1.Gain knowledge on the concepts of computer basics and Network technologies</p> <p>2.Understand the concepts of Operating Systems, Programming Languages and types of softwares</p> <p>3.Learn the Database Management systems, steps in development of databases and get an idea on different library software packages</p>
6.	LIS 106(A)	Information and Communication	2021	<p>1.Get an idea on the concept of data, Information, Knowledge and wisdom.</p> <p>2.Understand the types of communication and channels of communication</p> <p>3.Understand the difference between the information society and knowledge society.</p>
7	LIS-107	Human Values and Professional Ethics-I	2021	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people</p>

				of the society. iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
8.	LIS-201	Information Sources and Services	2021	1.Learn documentary and non-documentary sources and different types of information sources 2.Know about the Indian and British National Bibliographies, and Electronic Books 3.Understand the virtual reference service and translation Services
9.	LIS-202	Knowledge Organization: cataloguing Theory	2021	1.Understand the basic ideas on catalogue, forms of the catalogue, Main Entry and added entries 2. Know the Canons, Principles and Laws of Cataloguing 3.Gain the knowledge on different types of subject headings, Cooperative and Centralized cataloguing
10.	LIS-203P	Knowledge Organization: cataloguing Practice	2021	1.Gain knowledge on Anglo American Cataloguing Rules 2.Learn the preparation of Main entry and added entries for monographs and serial publications 3. Gain the skills on preparation of entries on cartographic materials, manuscripts and sound

				recordings
11	LIS-204P	Meta data Standards- Practice	2021	<ol style="list-style-type: none"> 1. Know the Metadata and its types, standards 2. Learn the skills on KOHA Software 3. Learn the skills on MARC 21 and Dublincore
12	LIS-205(A)	Library Management	2021	<ol style="list-style-type: none"> 1. Gain knowledge on meaning and purpose of management, Organizational Structures 2. Able to identify the factors behind selection, procurement and accessioning of documents 3. Gain knowledge on a circulation system suitable for a library, different budgetary methods and its standards, norms and principles
13	LIS 206(A)	Scholarly Communication	2021	<ol style="list-style-type: none"> 1. Gain knowledge on components and channels of scholarly communication. 2. Understand the basic concept of copyright Act. 3. Learn skills on Electronic Journals' and Databases
14	LIS-207	Human Values and Professional Ethics-II	2021	<ol style="list-style-type: none"> i. Student will know the values of ethics in various fields including medical, social and business ethics. ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
15	LIS-301	Information Processing and Retrieval Theory	2021	<ol style="list-style-type: none"> 1. Understand the basic concepts on Information procession and Retrieval and various schemes on classification

				<p>2.Learn the Indexing Systems and Techniques and their Evaluation Criteria and Studies</p> <p>3.Gain knowledge on Web based Information Retrieval Systems</p>
16	LIS-302	Library Automation and Digital Library	2021	<p>1.Learn the basics of Library Automation, various modules of library automation software packages and their features</p> <p>2.Gain knowledge on basic concepts and characteristics of digital libraries</p> <p>3.Know about network and communication devices, digitization and metadata</p>
17	LIS-303 (A)	Internship	2021	<p>1.Attain skills on all types of sections and its maintenance in libraries in which they underwent training</p> <p>2.Get skills on maintenance of Digital Library</p> <p>3.Learn the skills on preservation and conservation of manuscripts and digitization</p>
18	LIS-303(B)	Academic Library System	2021	<p>1.Know the basic objectives, growth and development of Academic Libraries in India, UK and USA</p> <p>2.Learn about an overview of higher education in India, UGC, its powers and functions and its role in the development of academic libraries</p> <p>3.Understand the total design of the building, techniques of financial management, and know the organization of library and information services needed by distance learners and special users</p>
19	LIS-304	Communication, Soft skills and Etiquette	2021	<p>1.Understand the different types of softskills</p> <p>2.Learn the presentation skills like:Role Plays, Public Speaking skills etc.</p>

				3.Gain knowledge on written communication skills, essay writing, report writing etc.
20	LIS-305B	Information Literacy (OE)	2021	1.Learn the concepts of Information Literacy and sources of Print and Electronic Information 2.Get the skills on information access through INFLIBNET Network 3.Able to understand the Internet and its search techniques and Intellectual Property Right
21	LIS-401	Research Methodology	2021	1.Understand the definition, need and purpose of various research methods 2.Get the knowledge on Research design, techniques and tools 3.Gain the skills on Data analysis and Interpretation of Data in SPSS.
22	LIS-402P	Software for Libraries-Practice	2021	1.Attain knowledge on D Space, Greenstone Digital Library Softwares 2.Learn about Koha : Library Management Software, E-Resources, Directory of Open Access Journals, 3.Get an idea on designing of Web Page and Data Mining
23	LIS-403(A)	Information Processing and Retrieval: UDC and Indexing Practice	2021	1. 1.Gain knowledge on Universal Decimal Classification 2.Learn different Indexing systems 3.Understand the design and development of thesaurus
24	LIS-40(B)	Management of Information System	2021	1.Know the basic concepts in Management, and various methods of decision-making and its application to Library and Information Centers 2.Understand the budgeting techniques and methods and policies and procedures 3.Gain knowledge on system analysis,

				PERT/CPM
25	LIS -404C	Dissertation/Project Work	2021	<p>1.Gain Knowledge on how to select the theme for their work</p> <p>2.Learn the writing styles, preparation of questionnaire, data analysis and interpretation and Citation styles</p> <p>3.Get the skills on findings and conclusion in dissertation</p>
26	LIS-405-(A)	Technical Writing	2021	<p>1.Know the definition and types of technical writing</p> <p>2.Attain the idea on technical writing process and styles</p> <p>3.Get the skills on technical writing techniques, use of MS-Office for preparation and presentation of technical writing</p>

17. Mass Communication & Journalism

18. Performing Arts (Music)

S. No.	Course Code	Title of the Course	Years of Introductio	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development	Link to the relevant document
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1	162	MA Performing Arts(Music)	2021	PAM-105-A (P) Abhyasa Gana -1 Clear cut training of foundation in Carnatic Music	Proof Enclosed
2	162	MA Performing Arts(Music)	2021	PAM-105 -B (P) Abhyasa Gana-2 Clear cut training of foundation in Carnatic Music which helps to understand the effective aspects of the program	Proof Enclosed
3	162	MA Performing Arts(Music)	2021	PAM-105-C (P) Abhyasa Gana-3 Basic level voice culture training of foundation in Carnatic Music which helps the student to adopt any voice change for rendering light music , classical and semi classical	Proof Enclosed
4	162	MA Performing Arts(Music)	2021	PA-M 204 Compositions in Rare ragas widening knowledge of the student to perform rare ragas which is challenging in nature	Proof Enclosed
5	162	MA Performing Arts(Music)	2021	PA-M 205 (a) Abhyasa Gana -4 Clear advance level training of foundation in Carnatic Music	Proof Enclosed
6	162	MA Performing Arts(Music)	2021	PA-M 205 (b) Abhyasa Gana -5 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
7	162	MA Performing Arts(Music)	2021	PA-M 205 (C) C Abhyasa Gana -6 Clear cut advance level training of foundation in Carnatic Music	Proof Enclosed
8	162	MA Performing Arts(Music)	2021	PA-M 206 (a) Compositions from Geya Natakas Compositions from other genre of music will give wide oppurtunity for employment	Proof Enclosed
9	162	MA Performing Arts(Music)	2021	PA-M 302 Group kritis widening knowledge to perform group kritis	Proof Enclosed
10	162	MA Performing Arts(Music)	2021	PA-M 303 A Vakra Ragas Ability to plan and execute a successful Carnatic concert Ability to create new variety in Concerts	Proof Enclosed
11	162	MA Performing Arts(Music)	2021	PA-M 303 B Manodharma Sangita To enrich the knowledge of innovative music in students	Proof Enclosed

12	162	MA Performing Arts(Music)	2021	PA-M 303 D Post trinity compositions To educate the student about the recent past composition of Carnatic music	Proof Enclosed
13	162	MA Performing Arts(Music)	2021	PA-M 304 Communication & Soft Skills (T) To promote soft skills among the students so as to develop attributes that could enhance interactions, earning power and job performance.	Proof Enclosed
14	162	MA Performing Arts(Music)	2021	PA-M 305 - A – Patriotic /Folk Songs To inculcate students about patriotism and to educate about the music of the Land.	Proof Enclosed
15	162	MA Performing Arts(Music)	2021	PA-M 402 Concert Ability to plan and execute a successful Carnatic concert Ability to create self employment opportunity	Proof Enclosed
16	162	MA Performing Arts(Music)	2021	PA-M 403 A Ragam Tanam Pallavi Learn and inculcate the most creative part of Carnatic Music To help student to shape out the creative rendering style of the student	Proof Enclosed
17	162	MA Performing Arts(Music)	2021	PA-M 403-BCompositions of Dance Repertoire Knowledge in application of music in other art fields like theatre, opera etc Knowledge to select and utilize ragas according to the theme and text.	Proof Enclosed
18	162	MA Performing Arts(Music)	2021	PA – M 403 - C Post trinity composers- 20th century and beyond To make the student aware about the musical forms of recent personalities of Carnatic music	Proof Enclosed
19	162	MA Performing Arts(Music)	2021	PA-M 404 Project work Introduce to the methodology of doing research in music and introducing to data collection, analysis etc and train up him to look into the facts based on evidences	Proof Enclosed
20	162	MA Performing Arts(Music)	2021	PA – M 405 - A - Compositions of Annamacharya To educate students about devotional music of Tirupati	Proof Enclosed

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19. Philosophy

16.philosophy				
S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
	101	Classical Indian Philosophy	2021	. 1The Student has applied the knowledge of classical Indian Philosophy. 2.The Student has analyzed the principles of classical Indian Philosophy
	102	Epistemology Indian	2021	1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
	103	Logic Indian and Western	2021	1. The Student has known the Indian Epistemology 2. The Student has understood the Pramanas in Indian Philosophy
	104	Western Philosophy- Greek and Medieval	2021	1.The Student has known the important issues of Western Philosophy 2. The Student has understood the Principles of greek


				and medieval Philosophy
	105-A	Problems in Metaphysics	2021	<ol style="list-style-type: none"> 1. The Student has known the Problems of Metaphysics 2. The Student has understood the Principles of Metaphysics
	202	Ethics- Indian	2021	<ol style="list-style-type: none"> 1. The Student has known the Ethics in Indian Philosophy 2. The Student has understood the various Ethical Principles in Indian Ethics.
	203	Ethics –Western	2021	<ol style="list-style-type: none"> 1. The Student has known the Ethics in Western Philosophy 2. The Student has understood the Ethical theories of Western Philosophy
	204	Modern Western Philosophy	2021	<ol style="list-style-type: none"> 1. The Student has known the Problems of Modern Western Philosophy 2. The Student has understood the thoughts of Modern Western Philosophers.
	205-A	Philosophy of Education	2021	<ol style="list-style-type: none"> 1. The Student has known the Contents of Philosophy of Education. 2. The Student has understood the Educational aspects of Philosophy of Education
	207	Audit course (HVPE)	2021	<ol style="list-style-type: none"> 1. The Student has known the essence contents of human values. 2. The Student has understood the Professional Ethics..

	301	Social and Political Philosophy	2021	<ol style="list-style-type: none"> 1. The Student has known the contents of social Philosophy. 2. The Student has understood the Principles of Political Philosophy.
	302	Philosophy of Vedanta	2021	<ol style="list-style-type: none"> 1 . The Student has known the Philosophy of Vedanta. 2. The Student has understood the Philosophical Doctrines of Vedantas
	303-A	Philosophical Approach to Gandhi	2021	<ol style="list-style-type: none"> 1. The Student has known the metaphysical issues of Gandhi. 2. The Student has understood the Gandhian Philosophy
	303-B	Philosophy of B.R.Ambedkar	2021	<ol style="list-style-type: none"> 1. The Student has analyzed the Philosophy of Ambedkar.. 2. The Student has applied the Philosophical aspects of Ambedkar.
	305-A	Philosophy of Value Education	2021	<ol style="list-style-type: none"> 1.The Student has known the importance of Education... 2. The Student has understood the Philosophical values for life.
	305-B	Sri Venkateswara Studies	2021	
	401	Phenomenology and Existentialism	2021	<ol style="list-style-type: none"> 1. The Student has analyzed the contents of Phenomenology.. 2. The Student has applied the Philosophical Principles of Existentialism
	402	Comparative Religion	2021	<ol style="list-style-type: none"> a.The Student has analyzed the aspects of Comparative Religion.. b. The Student has applied the Philosophical Principles

				of different Religions
	403-A	Philosophy of Jiddu Krishnamurti	2021	<p>1.The Student has known the Philosophy of Jiddu Krishnamurti...</p> <p>2. The Student has understood the Philosophical insights and of jiddu Krishnamurti</p>
	403-B	Analytical Philosophy	2021	<p>1. The Student has known the contents of Analytical Philosophy.</p> <p>2. The Student has understood the Philosophy of Philosophers of Analytical Philosophy..</p>
	403-C	Sri Vaishnavism	2021	<p>1.The Student has analyzed the aspects of SriVaishnavism..</p> <p>2. The Student has applied the Philosophical Principles of .SriVaishvaism</p>
	403-D	Research Methodology and Computer Applications	2021	<p>1.The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer operating and applying principles</p>
	404	Philosophy of Peace	2021	
	405-A	Philosophy of Yoga	2021	<p>1.The Student has analyzed the principles of Research Methodology..</p> <p>2. The Student has applied the computer operating and applying principles</p>

20. Physical Education

S.No	Name of the	Course Code	Year of introduction	Activities/Content with direct	Link to the relevant
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	Course			bearing on Employability/ Entrepreneurship/ Skill development	document
1	B.P.Ed	Bachelor of Physical Education	2014-15	100%	 B.P.Ed students employability . pdf
2	Ph.D	Ph.D	2008	100%	

21. Political Science & Public Administration

22. Population Studies

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	PS 101	Population Characteristics and Theories	2021	<ol style="list-style-type: none"> 1. Identify basic demographic concepts and definitions in Population studies 2. Impart knowledge on Population trends in size and growth of population at regional, national and global level. 3. Discover the implications of different theories on past and present population components with special reference to Malthusian theory
2	PS 102	Fertility	2021	<ol style="list-style-type: none"> 1. Examine the basic concepts and measurements of fertility 2. Assess, compare and contrast trends in fertility and its determinants 3. Familiarize the concepts of Nuptiality and factors affecting Nuptiality 4. Examine theories related to fertility and its applications in different situations
3	PS 103	Mortality	2021	<ol style="list-style-type: none"> 1. Identify the various concepts and measures of mortality 2. Examine the global levels and trends in mortality and its determinants 3. Acquire knowledge on techniques of life tables, constructions of

				multiple-decrement life table and computational aspects for demographical analysis	
4	PS 104		Sources, Evaluation and Adjustment of Data	2021	<ol style="list-style-type: none"> 1. Examine and compare merits and demerits of various sources of population data 2. Understand the evaluation of data, factors affecting completeness of data 3. Reproduce knowledge on population projections, calculations and applications
5	PS 105	A	Population Education and Extension	2021	<ol style="list-style-type: none"> 1. Examine the components of population education and create awareness on population education among the students and youth 2. Acquire skills to organize Extension Programmes in population education at school, college and Non formal educational levels 3. demonstrate training on population education methods and techniques in order to create awareness on population education
		B	Public Health, Nutrition and Health Education	2021	<ol style="list-style-type: none"> 1. Import knowledge on the importance of public health various health aspects, like curative, preventive and preventive aspects of public health. 2. Discover the indicators of health, food and its classification, Nutrition and balanced diet. 3. Imports knowledge n Nutritional policies and programmes, health education programmes and agencies involved in the health education.
		C	Health Planning and Policy	2021	<ol style="list-style-type: none"> 1. Understanding the Health services, indicators of health morbidity and mortality, structure and organization of health in India 2. Acquired knowledge on national and international agencies, NGO's involved in health programmes 3. Experiment skills in health planning process, decision making, budgeting and target setting in health programmes
6	PS 106	A	Population and Development Planning	2021	<ol style="list-style-type: none"> 1. Import knowledge on indicators of economic development, quality of life, human development index and modernization. 2. Discover the consequences population growths on economic development with special reference to demographic behavior, behaviour in the context of socio economic changes.

					3. Identify food requirements and production, food security in relation to population growth
		B	Population and Environment	2021	<ol style="list-style-type: none"> 1. Examine the human geography and its relevant to population studies with reference to ecology and eco-system. 2. Identify Environmental issue population global warming green house effect, EL-NINO effect etc., 3. Examine the changing patterns conservations and management of land and policies, programme better management.
7	PS 107		Human Values and Professional Ethics - 1	2021	<ol style="list-style-type: none"> 1. Identify the concepts of ethics and its relation to religion, politics and environment 2. Memorize the different aspect of values and interpret the best skills in understanding the merits of value related aspects 3. Demonstrate to interpret crime and theories of punishment with special reference to acquire knowledge on Manu and Yajnavalkya
8	PS 201		Migration and Multi Regional Demography	2021	<ol style="list-style-type: none"> 1. Explore the different types and trends in migration 2. Apply skills in measurement, causes and consequences of different migrations in different regions 3. Explore the theories and recommend suitable policies of migration
9	PS 202		N.G.O Management	2021	<ol style="list-style-type: none"> 1. Understand the role, importance and establishing of NGO's 2. Explore the sources of funding of NGO's at national and international level 3. Explore demographic data by working with individuals, groups and communities
10	PS 203		Statistical Methods	2021	<ol style="list-style-type: none"> 1. Familiarize the basic statistical methods and its applications to demographic data 2. Demonstrate knowledge on methods and techniques of sampling 3. Acquire skills in processing of data with computer 4. Demonstrate the testing of hypotheses, t-tests, Chi-square tests, correlation and regression
11	PS 204		Population Sociology	2021	<ol style="list-style-type: none"> 1. Examine the basic sociological concepts, and evaluate the relationship of sociology to other social sciences

				<ol style="list-style-type: none"> 2. Identify the social institutions, social change and socialization 3. Explore the sociological theories of fertility and its application in contemporary society 4. Explore the present society and its relationship to individual 	
12	PS 205	A	Population and Sustainable Development	2021	<ol style="list-style-type: none"> 1. Examine the concepts and theoretical issues relating to sustainable development and sustainable goals 2. Assess and measure the quality of life, resource creation, and management and distribution 3. Critically think of the relationship between population, environment, poverty and population sustainable growth
		B	Population Economics	2021	<ol style="list-style-type: none"> 1. Gained knowledge on concepts of basic concepts of economics and its relation to population change 2. Acquired knowledge on measurements of national income, income distribution causes and consequences of inequalities in income. 3. Relate the population growth in relation to levels and trends, causes and policies of employment.
		C	Disaster Management	2021	<ol style="list-style-type: none"> 1. Summarize and understand the disasters and Disaster Management 2. Acquire a critical perspective of the policy framework, Institutional Structures and programmes for Disaster Management in India 3. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management
13	PS 206	A	Community Health	2021	<ol style="list-style-type: none"> 1. Discover comprehensive knowledge on concepts of community health, illness, disease prevention 2. Critical thinking on epidemiology, communicable diseases and its prevention 3. Understand and appreciate the concepts of health, nutrition, balance diet, nutrition deficiency diseases and National Health Programmes
		B	Demographic Data Management	2021	<ol style="list-style-type: none"> 1. Import knowledge on census evaluation of Indian census and census organizations.

					<ol style="list-style-type: none"> 2. Identify the SRS system in India, Model registration scheme, population registers. 3. Discover the evaluation of census data, management techniques and errors in census, coverage and content errors.
14	PS 207		Human Values and Professional Ethics – II	2021	<ol style="list-style-type: none"> 1. Acquire and gain knowledge on different concepts of human values and behavioural changes. 2. Recognizing the medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics of medical and health care professionals. 3. Acquire skills on environmental ethics and its relation to Health 4. Discover the Social ethics, human trafficking, human rights, and media ethics
15	PS 301		Population Geography	2021	<ol style="list-style-type: none"> 1. Enumerate the geographical factors affecting the distribution of population 2. Awareness and understanding of trends in urbanization and its impact on ecological imbalance, global warming, greenhouse effects. 3. Able to assess changing pattern of land use, conservation of resources and critical thinking of policies, programmes for better management of environment
16	PS 302		Research Methodology	2021	<ol style="list-style-type: none"> 1. Demonstrate in conducting population research and surveys 2. Prepare research design and apply sampling techniques 3. Discover skills in methods and tools of data collection, data analysis, interpretation, and report writing.
17	PS 303	A	Population Psychology	2021	<ol style="list-style-type: none"> 1. Appreciate the scope of psychology and the relationship between value of children and fertility 2. Familiarize and comprehend the significant psychological theories relevant to fertility and contraceptive behavior 3. Demonstrate leadership and effective communication skills in promoting health and family planning
		B	Population Policy and Programmes	2021	<ol style="list-style-type: none"> 1. Explore population policies related to fertility, mortality and migration 2. Acquire the knowledge on methods of family planning and acts

					<p>relating to medical termination of pregnancy, age at marriage and also registration of vital events</p> <ol style="list-style-type: none"> 3. Apply best practices and strategies for promoting family welfare programme.
		C	Gerontology	2021	<ol style="list-style-type: none"> 1. Understand the scope of gerontology and demographic dimensions of the elderly 2. Critically explore and analyze changes in status of elderly health, problems and needs of elderly 3. Acquire skills in dealing elderly issues like neglect, abuse, violence and abandonment caregivers stress and elderly neglect
		D	Population Ecology, Urbanization and Migration	2021	<ol style="list-style-type: none"> 1. Import knowledge on population policies influencing fertility, mortality and migration. 2. Discover the world population conferences and India conference on population policies programmes 3. Examine the Administrative setups of family welfare programmes at the National, state, district and PHCs levels.
18	PS 304		Soft and Employability Skills	2021	<ol style="list-style-type: none"> 1. Expose to soft skills and listening and its employability, types of listening, effective listening and barriers to listening. 2. Import knowledge on communication skill and inter personal skills, types and stages. 3. Expose to employability skill and its stages, professional skill, decision making skills and stress management.
19	PS 305	A	Principles of Population Studies	2021	<ol style="list-style-type: none"> 1. Explore the components of population change, trends in size and growth of population 2. Discover the concepts of fertility, mortality and migration 3. Acquire skills in exploring the sources and quality of data on fertility, mortality and migration
		B	Population, Society and Environment	2021	<ol style="list-style-type: none"> 1. Import knowledge on components of population changes and its social changes. 2. Discover the population and socio-economic changes and its consequences of demography and social problems. 3. Expose to ecology and Environment sustainable development in relation to population growth.

20	PS 401	Communication for Family Welfare Programmes	2021	<ol style="list-style-type: none"> 1. Examine the elements in communication process 2. Understand and apply different approaches to communication 3. Critically analyse and apply factors influencing a various communication methods to promote family planning 	
21	PS 402	Reproductive Health and Adolescent Issues	2021	<ol style="list-style-type: none"> 1. Examine the anatomy and physiology of human reproduction, conception and pregnancy 2. Describe the male and female reproductive health problems 3. Assess and examine various adolescent issues 	
22	PS 403	A	Population Growth and Development	2021	<ol style="list-style-type: none"> 1. Understand the indicators of development with special reference to population growth and development. 2. Discover the concepts of economic inequality and its causes 3. Examine the status of women and development and demographic consequence of women empowerment
		B	Health Economics	2021	<ol style="list-style-type: none"> 1. Explore the concepts in economics in relation to health and population dynamics 2. Acquire skills in assessing costing and health economics 3. Critically analyze and evaluate general health status and quality of life and also measurement of health outcomes
		C	Demography of Andhra Pradesh	2021	<ol style="list-style-type: none"> 1. Acquire knowledge on basic trends and changes in population growth in Andhra Pradesh 2. Examine the migration and urbanization, problems of slums and related policies with special reference to Andhra Pradesh 3. Explore the population policies and programmes in Andhra Pradesh
		D	Demographic Techniques	2021	<ol style="list-style-type: none"> 1. Import knowledge on demographic techniques - life table, UN model life table, Coale and Demeny regional model life table. 2. Discover the stable population theory and its concept, measurement of migration and vital statistic methods. 3. Identity the interpolation smoothing of Age data and graduation techniques, projection of fertility, mortality and migration, Evaluation of projection
23	PS 404	Dissertation/ Project Work	2021	<ol style="list-style-type: none"> 1. Develop in-depth knowledge of field work and community surveys 	

					<ol style="list-style-type: none"> 2. Acquire the skills to present and discuss the findings through seminars 3. Explore the skills in preparation and presentation of research findings
24	PS 405	A	Rural, Urban, Tribal Development	2021	<ol style="list-style-type: none"> 1. Explore the characteristics of rural, urban and tribal community 2. Discover community development and experiment projects in rural, urban and tribal areas 3. Critically examine and understand the issues related to rural, urban and tribal areas and approaches to community development
		B	Social policy and planning	2021	<ol style="list-style-type: none"> 1. Discover social policies in relation to Indian constitution. 2. Examine the approaches to social policy 3. Demonstrate and analyze various social policies and their implementation

Masters in Social Work

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/Skill development
1	MSW 101	Sociology for Social Work	2021	<ol style="list-style-type: none"> 1. Discover basic concepts in Sociology and examine the relation between individual and society. 2. Distinguish between Socialization, Social institutions and Social groups 3. Critically demonstrate , Social Stratification, Social Deviance, Social Change and Social Problems
2	MSW 102	Human growth and Personality Development	2021	<ol style="list-style-type: none"> 1. Memorize various stages of Human Growth and Development 2. Identify different concepts of Human Behavior like Motivation, Perception, Learning and Attitudes

				3. Discover experience in assisting the person in Solving their Psycho social problems through personality development and adjustment	
3	MSW 103	Social Work Profession and Field Work Orientation-1	2021	<ol style="list-style-type: none"> 1. Recall various concepts like Social Service, Social Welfare, Social Development and Social Work 2. Experiment on Ethical Values of Professional Social Work and analyze current trends in Social Work 3. Design field work in Social Work and acquire skills to involve the client in problem solving process 	
4	MSW 104	Social Work practice with Individuals and Groups	2021	<ol style="list-style-type: none"> 1. Recognize the basics Concepts , Techniques and Skills of case work 2. Apply different approaches of Case Work, Group Work 3. Evaluate the application of Social Case Work and Group Work at various settings like Schools, Hospitals, and Correctional Settings and in Communities. 	
5	MSW 105	A	Social Work Practicum-I	2021	<ol style="list-style-type: none"> 1. Recognize the significance of Social Work in various settings 2. Illustrate the application of Social Work Methods in the agencies during their field practicum 3. Examine the applications of Social Work Principles and Skills in the functions of different organizational systems
		B	Issues and Concerns in Occupational Social Work	2021	<ol style="list-style-type: none"> 1. Identify needs issues and problems effecting work life and organization life of Indian occupational workers.

					<ol style="list-style-type: none"> 2. Discover the issues and challenges of factory workers and industrial relations. 3. Identify working conditions and conditions of work in the workers in organized and unorganized sectors.
		C	Social Work Practice and Information Communication and Technology	2021	<ol style="list-style-type: none"> 1. Examine ICT application functions and Significance in the present context of social change 2. Able to analyze different technological devises and apps social networking sites. 3. Acquire skills in conducting and practicing ICT and Social work practices 4. Demonstrating professionalism in designing community map, community radio and developing documentaries and evidence building ICT use in social work practices
6	MSW 106	A	Social Work in Industry and Human Resource Management	2021	<ol style="list-style-type: none"> 1. Enrich knowledge on HRM, Personnel management, HR planning and management systems 2. Appraise organizational behavior, conflict Resolution Strategies and Legislation related to industrial relations 3. Develop skills in Industrial Social Work Practice and the role and significance of Corporate Social Responsibility
		B	Corporate Social Responsibility and Social Entrepreneurship and Social Work	2021	<ol style="list-style-type: none"> 1. Understanding concept, context and evaluation, models and perspectives of CSR. 2. Impart knowledge on the concept and context of social

					<p>entrepreneurship in relation to socio-economic development.</p> <p>3. Acquiring the knowledge skill and competencies of a social e entrepreneurship, financial management and fund rising.</p>
7	MSW 107		Human Values and Professional Ethics - I	2021	<p>1. Familiarize the concepts of ethics and its relation to Religion, Politics and Environment etc.</p> <p>2. Able to gain knowledge on different aspect of Values and Interpret the best Skills in understanding the merits of value related aspects</p> <p>3. Discover to interpret Crime and Theories of Punishment with special reference to Manu and Yajnavalkya</p>
8	MSW 201		Social Work Profession and Field Work Orientation-II	2021	<p>1. Recognize the Scope, Importance and Significance of Social Work Practice in different fields</p> <p>2. Acquire Knowledge and Skills Essentials for Working with Groups and Communities</p> <p>3. Formulate Capacity Building by organizing training and awareness programmes in the Field Work Settings</p>
9	MSW 202		Social Work Practice with Communities	2021	<p>1. Acquainted with advanced level of knowledge in Community organization and Social Work practice</p> <p>2. Appraise various approaches in Community Organization and Current issues in Community Organisation</p> <p>3. Organize community participation using PRA methods and</p>

				techniques	
10	MSW 203	Social Action and Social Legislation for Social Work Practice	2021	<ol style="list-style-type: none"> 1. Distinguish the elements of Social action, Models and Process of Social Action 2. Connect the Social Legislations with Social Work Practice 3. Appraise Laws pertaining to Women, children and Aged in Social work practice 	
11	MSW 204	Social work Research	2021	<ol style="list-style-type: none"> 1. Acquainted with advanced level of knowledge in Social Work Research process and Statistics 2. Illustrate single subject and evaluation Research Designs along with various Research designs 3. Facilitate methods of Sampling, Data Collection, Analysis, Statistical-Applications and Report Writing 	
12	MSW 205	A	Social Work Practicum-II	2021	<ol style="list-style-type: none"> 1. Examine the Nature, Scope and Functions of the different Government and non-profit organizations agency at ground level 2. Trained to assist their supervisor with in the limitations of the agency 3. Equipped with Professional Skills and Techniques through practical exposure
		B	Social Work Practice with Differently Abled	2021	<ol style="list-style-type: none"> 1. Import knowledge on concept, Nature and models of disability and understanding trends and current situation of disability.

					<ol style="list-style-type: none"> 2. Import knowledge on disability issues, problems and responses of disability. 3. Understanding policies, rehabilitation of persons with disability, services for the PWD.
		C	Social Work and Disaster Management	2021	<ol style="list-style-type: none"> 1. Summarize and understand the disasters and Disaster Management 2. Acquire a critical perspective of the policy framework, Institutional Structures and 3. programmes for Disaster Management in India 4. Explore Mental health consequences and able to provide Psychosocial care in Disaster Management
13	MSW 206	A	Counseling in Social Work Practice	2021	<ol style="list-style-type: none"> 1. Understanding the basics of Counseling and Approaches of Counseling 2. Develop ability to apply appropriate Counseling Techniques with Special Group 3. Demonstrate to apply Counselling Skills while working with clients in various settings like Health , Family and School Settings
		B	Social Welfare Project Formulation and Management	2021	<ol style="list-style-type: none"> 1. Understand the principles of social welfare admiration and process, aware of social welfare governmental agencies involved in social welfare. 2. Ability to start and run N.G.Os and carryout welfare activity independently. 3. Experiment skills in project formulation, programmer

					planning monitoring and evaluation.
14	MSW 207		Human Values and Professional Ethics - II	2021	<ol style="list-style-type: none"> 1. Summarize different concepts of Human Values and Behavioural changes required for adjustment in Family and Society 2. Demonstrates Medical ethics and views of Charaka, Sushruta and Hippocrates on moral ethics in Medical and Health care professionals. 3. Acquire Skills on Environmental ethics and the Environment and Health 4. Appraise Social Ethics, Human Trafficking, Human Rights, and Media Ethics
15	MSW 301		Social Intervention Work With Families	2021	<ol style="list-style-type: none"> 1. Discover the Family Centered Practice as a Model of Social Work practice and understand Family life management and Family Dynamics 2. Demonstrate Family Assessment and Application of Tools : Interviewing , Ecological assessment – Eco map , Generation assessment- Genogram, Triangle, Family Sculpture and Family Mapping 3. Integrate social work practice with Families and Social Work Therapeutic Interventions wherever appropriate
16	MSW 302		Social Work in the Field of Health	2021	<ol style="list-style-type: none"> 1. Examine the concept of Health, factors affecting health and Indicators of Health. 2. Evaluate Primary and Community healthcare services with special references to communicable and Non-communicable diseases 3. Assess the relevance, domains and nature of Social Work Intervention in different Health settings.
17	MSW 303	A	Criminal Justice and Social Work Practice	2021	<ol style="list-style-type: none"> 1. Acquiring knowledge on the concept, causation of crime, Theories of crime and punishment and its relations to social problems.

					<ol style="list-style-type: none"> 2. Understanding the concept of social difference and correctional services and also community based incentives with correction programmes. 3. Examine the juvenile Justice Act, Immoral Trafficking prevention Act, Narcotic drugs and Psychotropic substance Act etc.,
		B	Social Work Practicum-III	2021	<ol style="list-style-type: none"> 1. Analysis the role of Community and dramatize the Community Organisation in field work practice 2. Develop skills and expertise their Field Work exposure to organize community programmes 3. Examine the new Intervention programs in the area of their specialization to bring a solutions to the problems in different community
		C	Social Policy and Planning	2021	<ol style="list-style-type: none"> 1. Examine the nature and Approaches of Social Policy in the Socio-economic and political context 2. Assess the implementation of Social Welfare Policies in Education, Health, Women, Children and Environment 3. Examine the Role of Social Workers in Formulating , Planning and Implementation of Social Policies
		D	Gerontological Social Work	2021	<ol style="list-style-type: none"> 1. Identify the Scope of Social Work in the field of Gerontology. 2. Illustrate Changes in the status of Elderly, Health problems and needs of Elderly. 3. Experiment the social work interventional strategies to Elderly ,Care givers and Counseling
18	MSW 304		Soft and Employability Skills	2021	<ol style="list-style-type: none"> 1. Expose to soft skills and listening and its employability, types of listening, effective listening and barriers to listening. 2. Import knowledge on communication skill and inter personal skills, types and stages. 3. Expose to employability skill and its stages, professional skill, decision making skills and stress management
19	MSW 305	A	Fundamentals of Social Work	2021	<ol style="list-style-type: none"> 1. Examine basic concepts, Principles and Methods of Social Work 2. Defend values and Principles of Professional Social Work

					and Code of ethics for Social Workers 3. Evaluate Social Work Education in India, Professional Associations, Problems of Professionalization and Networks in Social Work
		B	Human Rights and Social Legislation	2021	1. Acquainted with advanced level of knowledge in Human rights 2. Distinguish various Social Legislations and Legislations related to Women and Children 3. Nurture the Social Work Professionals by creating awareness on various current issues and related Legislations
20	MSW 401		Social Intervention Work With Children	2021	1. Examine the Significance and Development of Child Welfare Services with special reference to Child Rights 2. Appraise various Institutional and Non-Institutional services for children in need 3. Create Professional Knowledge on Social Work Intervention with children in difficult situations
21	MSW 402		Rural, Urban, Tribal Development and Empowerment	2021	1. Acquainted with advanced level of knowledge in rural Urban and Tribal community and Community Development Projects across the country 2. Trained to meet the challenges specifically related to Rural, Urban and Tribal communities 3. Will nurture the Social Work Professionals to become effective Social Worker and contribute to community by conducting awareness camps, strengthening Self-Help Groups and Facilitating Empowerment in the communities.
22	MSW 403	A	Social Work in the Field of Mental Health	2021	1. Understand the concept and importance of Mental Health and Psychiatric Social Work 2. Distinguish Psychiatric disorders and application of Therapeutic Interventions in Psychiatric Illness 3. Plan to provide Psychiatric Rehabilitation to assist Mentally Ill patients
		B	Social Work Practicum-IV and	2021	1. Acquires training in the organization as social worker and develop sound knowledge on social work which will motivate

			Block Field work		<p>them to start an NGO</p> <ol style="list-style-type: none"> Evaluate projects and organize programmes for fund raising Hypothesize research in their area of specialization through which they can suggest recommendations to agencies for improving quality.
		C	Environment and Social Work	2021	<ol style="list-style-type: none"> Import knowledge environment and social work leakages, Environmental Justice and climate and Justice with reference to social work. Discover deferential impact of Environmental with reference to managerial groups of women, poor and indigenous populations. Discover the measures for Environmental conservation and identify the approaches, movements and action for Environmental conservation.
		D	Diversity and Inclusiveness	2021	<ol style="list-style-type: none"> Acquire knowledge on the concepts of diversity, inclusiveness and forms of social excuser Ability to relate the politics of castes, status of dilits and constitutional safe guards in India. Acquire knowledge on the concept of minority, types and composition of minorities and their poverty.
23	MSW 404		Social Work Project	2021	<ol style="list-style-type: none"> Explore research studies at Micro levels and submit reports as Project Work Apply Interview techniques and use data collection tools for research Apply theoretical knowledge and frame policies for to solve the society problems
24	MSW 405	A	NGO Management	2021	<ol style="list-style-type: none"> Distinguish the Concept, Structure, Registration and By laws of NGOs Demonstrate Organisational Management and source of funding of NGOs Familiarize to organize Human Resource Management in NGOs

		B	Health Education	2021	<ol style="list-style-type: none"> 1. Discover the Roles, Responsibilities, Approaches and ethics in Health Education 2. Describe the Behavioral, Environmental, and Genetic risk factors for Communicable and Non- communicable diseases. 3. Evaluate channels of Health education and organizational health set up at Central, State and District levels
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23. Sanskrit

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	SNSKT 101	Elements of Darsanas-I	2021	<p>An understanding of the evolution of Darsanas</p> <ol style="list-style-type: none"> I.To create an awareness of the Darsanas ii.Acquire Knowledge of the Baudda and Jaina Darsanas iii.To get the Knowledge of Meemamsa Sastra
2	SNSKT-102	Vedic Texts-I	2021	<ol style="list-style-type: none"> I.Students able to get the Vedic knowledge II.Students know the importance of Vedic gods III.Students are understanding the Vedic chandas IV.To make understanding the spiritual knowledge through Kathopanishat
3	SNSKT-103	PROSE AND POETRY-1	2021	<ol style="list-style-type: none"> I.An understanding of evolution of Sanskrit poetry across the ages until the modern age II.Get the knowledge of gadya kavya III.Understand the poetical skills IV.Understand the importance of kiratarjuneeya in Sanskrit literature
4	SNSKT-104	DRAMA, ALANKARA AND PROSODY -1	2021	<p>Student will be able to get</p> <ol style="list-style-type: none"> I.Understanding the features of Sanskrit drama II.Knowledge of organ and development of Sanskrit dramas III.Understanding the efficiency of kalida's poetic skill. IV.Get the knowledge of chandas

				V.Get the knowledge of different types of chandas
5	SANSKT105 (A)	HISTORY OF SANSKRIT LITERATURE – 1	2021	After completed of course the students are able to I.Know the origin and development of Sanskrit literature II.Know the importance of Vedas and its date. III.Know the meaning and contest of Brahmanas, Aranyakas and Upanishads IV.Know the social conditions as reflected in the Brahmanas V.Know the importance of Ramayana and its date
6.	SANSKT :10 5(B)	DRAMA AND POETRY -1	2021	I.Students will be able to gain understanding the features of Drama, Sentiment Moralities II.Through understanding the importance and place of Rasa in the Drama III.The knowledge about the skillfulness of Bhavabhutis Dramatergy IV.Recognize the transpiration of human experiences into dramatic experiences V.The knowledge about importance of Sandesa Kavyas in Sanskrit Literature
7.	SANKT :105 (C)	ALANKARA AND PROSODY - 1	2021	I.Students will understand the different types of Alankara II.Know the importance of Alankara in the poetry III.Understand the development of on the basis of similar IV.Recognize the Guru and Laghu in prosody V.Know the importance of melody through prosody
8.	SANSKT:10 6(A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KOUMUDI- 1	2021	After complication of the course students are able to- I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing skills without grammatical mistakes..
9.	SANSKT:10 6 (B)	KAVYALANKARA SUTRA VRITTI -I	2021	I.Know the definition of poetry and prose II.Know the different types of Kavya III.Understand the different types of Riti IV.Understand the Pada and Padartha Doshas.

10.	SANSKT:10 7	HUMAN VALUES AND PROFESSIONAL ETHICS -I	2021	After completion of the course students are able to I.Understand Bhagavad Gita as a guide for modern life style II.Know the principles of Buddhism and Jainism III.Realize the necessary of practicing Human values and ethics in walks of life IV.Acquire the knowledge of Good and Bad V.Know the about crime and punishment according manu and Yajnavalkya
11	SANSKT – 201	ELEMENTS OF DARSANAS –II	2021	After completion of the course students are able to – I.Understand the knowledge of upamana and sabda pramanas II.Get the knowledge of Ayatharthanu Bhava III.Understand the Bahavana IV.Understand the Principals of Sankhya
12	SANSKT – 202	VEDIC TEXTS –II	2021	Students will know- I.The importance of Suktas II.The definition and purpose of Nirukta III.The meaning of Vedic words
13	SANSKT – 203	PROSE AND POETRY - II	2021	Students will able to get I.The beautification of prose literature. II.Enhancement of knowledge in appreciation of classical poetry III.Understanding about text that are selected. IV.Teaching skills in prose and poetry.
14	SANSKT – 204	DRAMA ALANKARA AND PROSODY – II	2021	Students will know I.The different characteristic features in Dramas II.The importance of nature and hermitages III.The features of Alankara and Classification of Alankaras IV.The knowledge of prosody
15	SANSKT – 205 (A)	HISTORY OF SANSKRIT	2021	After the completion of the course students are able to I.Know the features of Mahakavyas

		LITERATURE –II		II.Know the structure of Drama and social message III.Know the moral values through the tales IV.Get the glance of classical Sanskrit literature
16	SANSKRT – 205 (B)	DRAMA AND POETRY - II	2021	I.Get knowledge of good II.Know the character of Hero and Hero in etc., in the Drama III.Know the changes stories between original and creativeness IV.Know the importance skill fullness in poetry of Kalaidasa
17	SANSKRT – 205 (C)	ALANKARA AND PROSODY - II	2021	I.Know the features and Examples II.Understand the different types of Uktis in Alankaras III.Know the difference between stuti and Ninda Alankaras IV.Get knowledge of sikharini and Mandakranta vrittis V.Know the definition and importance of Gayatri Matras
18	SANSKRT - 206 (A)	COMPARATIVE PHILOLOGY AND SIDDHANTA KAUMUDI – II	2021	After completion of the course students are able to – I.Find out the main causes of semantic change II.Know the classification of suffixes the theories on the origin of suffixes III.Learn the morphological classification of verbs IV.Know the structure of vibhaktis and roots system and develops their writing Skills without grammatical mistakes
SANSKRT-206 (B)		KAVYALANKARA SUTRA VRITTI - II	2021	I.Know the difference between Guna and Alankara II.Ability to understand the theory of Riti III.To enable to understand the usage of Sabdalankaras IV.Know the contribution of Vamana to alankara sastra
20	SANSKRT - 207	HUMAN VALUES AND PROFESSIONAL ETHICS - II	2021	I.Understand the relevance of value based education in modern society II.Understand the old traditions of medical ethics III.Understand the solutions of illegal and unethical practice IV.Understand the man and nature, Natural calamities and get the solution regarding those situations.
21	SANSKRT :30 1	(Sahitya) RASAGANGADHARA, (ANANA.I) – I (IE)	2021	After the completion of the course students are able to I. Understand the Rasaswarupa II.Understand the purpose of Kavya and different types of Kavya

				III.Know the interpretations of Rasa sutras and ten types of Gunas IV.Know the Abhasas
22	SANSKT :30 2	DHVANYALOKA - 1	2021	on completion of the course students are able to I.Understand the Dhvani swarupam II.Understand the opinion of Dhvanyabhavavadins III.Know the Dhavanikavya Lakshana IV.Know the Vyangya as Kavyatma V.Get the knowledge of splendid sastra Dhvanyaloka
23	SANSKT :30 3-A	KAVYAPRAKASA AND DASARUPAKA- 1(IE)	2021	Students will get - I.The knowledge of definition of kavya, types of kavyas II.The Knowledge about verities of vyangya III.The Knowledge of vyanjanaswarupa IV.An idea of ten types of Rupakas
24	SANSKT:30 3-B	HISTORY OF SANSKRIT POETICS AND SANSKRIT ESSAY-I	2021	On completion of the course students are able to I. Get the knowledge of sentence formation to write the essays on different issues II. Acquire the knowledge of Alankarikas III.Understand the different theories in Alankara sastra. IV.Understand the theory of Alankara and Rithi.
25	SANSKT:30 3-C	Natyastraam Chapter I & VI only	2021	
26	SANSKT:30 3-D	Bhojaraja's Champu Ramayana (Balakanda only)	2021	
27	SANSKT:30 4	Personality Development in Pancatantra (Mitrabheda and Mitrapraptikam only)	2021	.I.Know the losses arriving out of Non friend ship II.Know the world knowledge III.Achieving personality development through Panchatantra
28	SANSKT:30	Introduction of Sanskrit	2021	

	5-A	languag Infant Reader complete		
29	SANSKT:30 5-B	Raghuvamsam (Ist canto only)	2021	on completion of the course students are able to I.Understand the greatness of Sanskrit Language II.Know the greatness of poetry III.Get knowledge on panchamahakavya's after the epic literature IV.Get the knowledge about the kalidasas Natural and beautiful creations V.Understand the uses of upamalankara by kalidasa
30	SANSKT:40 1	(SAHITYA) RASAGANGADHARA (ANANA-I)	2021	After completion of the course students are able to I.Know the number of Rasas in kavyas II.Know the uses of Rasa to elevate the situations in kavya III.Acquire the knowledge of Gunas and their role in Kavyas IV.Understand the differentiation of Bhava in Alankara sastra.
31	SANSKT :40 2	DHVANYALOKA –II	2021	Students will be able to get- I.The knowledge about different forms of schools II.Knowledge about the classification of Dhvani Siddhanta III.Knowledge regarding different alankara dhvanis IV.Know the difference between Rasadhvani and Rasavadalankara V.Know the main Rasa in Ramayana and Mahabharatha
32	SANSKT:40 3(A)	KAVYAPRAKASA AND DASARUPAKA– II	2021	After the completion of the course students are able to – I.Understand the structure of the Kavya II.Get the knowledge of Rasa and it's Bhedas III.Find out the classification of Dhvani IV.Understand the Lakshana of Nataka V.Get the knowledge about 10 types of Nataka Bhedas
33	SANSKT:40 3(B)	HISTORY OF SANSKRIT POETICS	2021	After the completion of the course students are able to – I.Get the knowledge of writing skills

		AND SANSKRIT ESSAY-II		II.Acquire the knowledge of several Aesthetic poets like Mammata, Ruyyaka III.Understand the main theories on kavya of different poets IV.Get the knowledge of presentation skills on social related issues
34	SANSKT :40 3(C)	Kavyadarsa Chapter – I	2021	
35.	SANSKT :40 3(D)	KavyaMeemamsa first to Eight Adhyayas	2021	
36.	SANSKT :40 4	Introduction to Epigraphy and Manuscriptology	2021	After the completion of the course students are able to I.Get the knowledge of inscriptions II.Acquire the knowledge of Brahmi and kharoshthi scripts III.Get the knowledge of writing materials in Ancient India IV.Get the knowledge of edition and critical edition of Manuscripts
37.	SANSKT :40 5 (A)	Hithopadesa of Narayanapandita Mitrabha and Mitrabheda	2021	Students will be able to I.Get the moral values II.Understand the mentality of different kinds of people in the society III.Acquire the knowledge to behave a good citizen and a well human being IV.Understand the message through neetikavya
38.	SANSKT :40 5(B)	Kautilya'sArthasastra Chapter – I (Vinayadhikarikam)	2021	

24. Sociology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1	MASO-101	Classical Sociological Theories	2021	<ol style="list-style-type: none"> 1. This paper seeks to expose the students to the classical thinkers and their contribution in building theoretical sociology. 2. To Compare and contrast the basic theoretical perspectives of sociology 3. To acquaint students with recent trends in Sociological thought.
2	MASO -102	Sociological Research Methods and Statistics	2021	<ol style="list-style-type: none"> 1. This course aims to enable the students to understand the fundamental nature of the scientific approach towards social research and apply the skills in undertaking social research. 2. To equip the students with strategies of development for different segments of society. 3. To provide ways and means of understanding and studying social reality
3	MASO -103	Indian Society and Inclusive Growth	2021	<ol style="list-style-type: none"> 1. This paper presents a comprehensive and integrated profile 2. To gain a better understanding of past and present structure and continuity of society 3. Identify and analyze the problems in Indian society and suggest solutions from sociological perspective
4	MASO -104	Participatory Research	2021	<ol style="list-style-type: none"> 1. This paper is to inspire students to undertake research in partnership with stakeholders 2. To explain the emancipatory and empowering, collaborative and reflective approaches 3. To discuss the relationship between PRA and scientific method to incorporate the results to

				change the practice and policy.
5	MASO -105	Principles of Sociology	2021	<ol style="list-style-type: none"> 1. This paper gives the students an understanding of the basic principles of Sociology as an academic discipline 2. To analyze the ways in which people interact and function in groups 3. It provides a basic knowledge on the fundamental aspects of the important social institutions
6.	MASO -106	Human values and Professional Ethics - 1	2021	<ol style="list-style-type: none"> 1. To help students distinguish between values, skills, and understand the need, basic guidelines, content and process of value education 2. To provide Human Values and Ethics relating to Religion, Business, Law, Media and Environment 3. To provide an in depth knowledge about the Moral and ethical values for interpretation in their day to day life
7.	MASO -201	Applied Sociology	2021	<ol style="list-style-type: none"> 1. To help students develop clear understanding of key concepts in classical and contemporary sociology and how these concepts relate to some of the perennial themes in the discipline 2. To develop an appreciation of the link between sociological theory and practice 3. To help students master the art of explaining abstract material in clear, precise ways that can be easily understood even by a lay man

8.	MASO -202	Social Demography	2021	<ol style="list-style-type: none"> 1. To introduce the significance of population and its relation to society 2. To provide a theoretical knowledge of the basic concepts of population and changes 3. To enable the students to realize impact of population , changing global scenario, awareness on population control devices and analyse prospects
9.	MASO -203	Rural Sociology and Development	2021	<ol style="list-style-type: none"> 1. This course is to help the students to understand the difference between urban and rural development 2. To analyse the dynamics of rural Indian society in the context of its socio, political and economic contradictions 3. To evaluate the problems related to development in relation to the needs and aspirations of the marginalized sections
10.	MASO -204	Extension Work	2021	<ol style="list-style-type: none"> 1. This paper expose the students to apply sociological theories and principles in field areas 2. To give direct experience of social institutions and social problems through field work 3. To train for creative and innovative experiences in social field using research techniques
11	MASO -205	Environmental Sociology	2021	<ol style="list-style-type: none"> 1. This paper aims to provide the students with a comprehensive conceptual, theoretical and empirical backgrounds of interaction between Social world and Nature 2. To explore the relationship between human

				<p>society and the larger natural environment</p> <p>3. To prepare the students for further research in broad areas of environment and natural resource governance from sociological perspective</p>
12	MASO -206	Human Values and Professional Ethics-II	2021	<p>1. To provide knowledge about Value oriented education, Medical ethics, Family values , Ethics and Moral code</p> <p>2. To provide the Business, Environmental and social ethics followed and practiced</p> <p>3. To enhance values of self-esteem and self-respect among students</p>
13	MASO -301	Medical Sociology	2021	<p>1. This course will help the students to understand the concepts of health and illness</p> <p>2. To understand the social facts of health and the root causes of illness</p> <p>3. To apply sociological theories, concepts, and research to experiences of health, illness, health education, public health and the intense public issues related to health</p>
14	MASO -302	Urban Sociology and Development	2021	<p>1. This paper attempts to analyse the urban social world and its dynamics, various theoretical constructs concerning the patterning and growth of towns and cities</p> <p>2. To understand the various theoretical approaches to urban development and apply them to different aspects of cities</p> <p>3. To study historical, economic, and political trends that have affected the growth and development of cities</p>
15	MASO -303	Field Work and Extension (Village	2021	<p>1. This paper aims at direct exposure of students</p>

		placement)		<p>to the real world and problems confronting society</p> <ol style="list-style-type: none"> Students will carry out field work in village for 10 days for practical experience To learn about sociological study techniques like Participatory Rural Appraisal, Sampling, Interview and Extension
16	MASO 304	Generic electives (a) Human Rights	2021	<ol style="list-style-type: none"> To study Human rights and Constitutional framework To recognize the role of human rights in development, theories of development, development and tradeoff on human rights To Understand the social, political, cultural, and comparative construction of human rights history , institutions, discourses, and futures
		(b) Sociology of Gender	2021	<ol style="list-style-type: none"> To examine how society influences understandings and perception of differences between masculinity (what society deems appropriate behaviour for a “man”) and femininity (what society deems appropriate behaviour for a “woman”). To understand influences of gender on identity and social practices. To pay special focus on the power relationships that follow from the established genderorder in a given society and changes over time.
		c) Gerontology	2021	<ol style="list-style-type: none"> This paper aims at understanding physical, psychosocial, and cultural aspects of the aged To understand aging transitions and intergenerational issues at various contexts

				and its nexus 3. To examine health and illness adjusting to loss and care of persons with chronic illnesses and rehabilitative needs
		(d) Sociology of Andhra Pradesh	2021	1. This paper aims to study the historical outline and emergence of Andhra society 2. To understand the culture and various social movements in Andhra Pradesh 3. To analyze the welfare and developmental programmes of the rural and urban Andhra Pradesh
17	MASO -305	Open elective (a) Social Psychology and Personality Development	2021	1. This paper aims at the understanding the relationship of cognition and attitudes of individual and society 2. To focus on psychological aspects of the individual in the context of social behaviour 3. To examine group dynamics such as group thinking and decision making, leadership, persuasion, conflict and cooperation)
		(b) Business And Society	2021	1. This paper aims at understanding the concepts of Social economy and knowledge management 2. To examine the business community and social responsibility 3. To understand the inter-relation among business firms, organizations , public policy, business law and governance
23	MASO -401	Criminology	2021	1. This paper seeks to describe the students about the different types of crime and scope of criminology 2. To illustrate the causes of crime and crime

				<p>rates</p> <p>3. To study the crime scientifically through data on crime, trends and various theoretical approaches</p>
24	MASO-402	Industrial Dynamics	2021	<p>1. This paper aims to provide the students about the structure and process of industrial organizations from sociological perspective</p> <p>2. To deal with the effects of industrialization on Indian social systems and institutions</p> <p>3. To study the internal relations which are connected directly or indirectly with industry</p>
25	MASO-403	Field Work	2021	<p>1. This paper aims at exposing students in analysing the data</p> <p>2. To understand the different variations in viva-voce</p> <p>3. To understand the recent patterns in Practice</p>
26	MASO-404	Generic electives (a) Social Welfare and Welfare Administration	2021	<p>1. This paper aims at understanding the efficiency of resources and services to meet the needs of the individuals, families, groups and communities</p> <p>2. To understand the problems of Schedule castes, Schedule tribes, Backward classes and Minorities</p> <p>3. To facilitate social relationship and adjustments necessary for the disadvantaged sections, children, women, youth and elderly</p>
		(b) Social Entrepreneurship Development	2021	<p>1. The aim of this paper is to understand the theoretical positions of the Social entrepreneurship development</p> <p>2. To be aware of the contemporary approaches</p>

				<p>to social entrepreneurship</p> <p>3. To have comprehensive understanding of the context, process and effects of entrepreneurial activities</p>
		(c) Sociological Perspectives	2021	<p>1. This paper aims at the students to compare and contrast basic theoretical perspectives of sociology through rigorous scientific enterprise</p> <p>2. To sensitize the need for empirically grounded theories</p> <p>3. To acquaint students with the recent trends in Sociological thought</p>
		(d) Globalization and society	2021	<p>1. This paper aims at the students to understand the nature and dynamics of globalization and social context through various agencies</p> <p>2. To analyze the interconnected changes in the economic, cultural, social, and political spheres of society</p> <p>3. To understand ever-increasing integration of nations, regions, communities</p>
27	MASO-405	Open elective (a) Globalization and Educational Pursuits	2021	<p>1. This paper aims to understand multifaceted nature of globalization and internationalization in the context of higher education</p> <p>2. To examine key concepts and theories of globalization, international and comparative education</p> <p>3. To make the students understand the Global citizenship from professional and academic perspective</p>

		(b) Visual Sociology	2021	<ol style="list-style-type: none"> 1. This paper aims at providing the students a new perspective in study of deliberate versus spontaneous behavior 2. To be aware of recording social signals, expressions as spontaneous as possible 3. To organize the recording of reactions and variations that occur as a response to the context
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25. Tamil

26. Telugu Studies

27. Urdu

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1.	URD 101	Mubadiyat-e- Lisaniyat aur Tareeq-e –Zaban-e-Urdu	2021	<p>Course Outcomes:</p> <p>(1) Knowledge of history of basic Urdu Language. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language</p>	
2.	URD 102	Dakniyat	2021	<p>Out come</p> <p>(1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyses the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani</p>	

3.	URD 103	Classiki Nasr	2021	<p>Course Outcomes:</p> <p>(1) Student will be able to understand the early Urdu poetry of Northern India.</p> <p>(2) Understanding the different forms of Urdu Poetry and poets.</p>	
4.	URD 104	Arabi Zaban-o-Adab	2021	<p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of humor and satire in Urdu literature.</p> <p>(2) Differentiate between satire and humor in text.</p> <p>(3) Analyze the text and identify the elements of satire</p>	
5.	URD 105	Fanne Sher aur Jadeed Asnafa Shairi	2021	<p>Course Outcomes:</p> <p>(1) Able to read, write and understand simple Arabic sentences.</p> <p>(2) Translate simple Arabic sentences.</p> <p>(3) Student will gain brief awareness of Arabic literature</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Qaseeda from Dakani period.</p> <p>(2) Differentiate between the Dakani and Urdu Qaseeda with respect of language, diction and style</p> <p>(3) Understand the salient features of Urdu Qaseeda with special reference to Nusrati, Sauda and Zauq.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about the tradition of Urdu Marsiya.</p> <p>(2) Compare and analyse the Marsiya of Anees and Dabeer.</p>	
6.	URD 106	Human Values and Professional Ethics – I	2021	<p>Course Outcomes:</p> <p>(1) Knowledge about tradition of Urdu Drama.</p> <p>(2) Distinguish various forms and techniques of Urdu Drama.</p> <p>(3) Analyses critically the text of Anar kali and Inder Sabha.</p> <p>Course Outcomes:</p> <p>(1) The student would enrich the knowledge about the Urdu poets and writers of Andhra Pradesh and Tamil Nadu.</p> <p>(2) Would understand the features of regional Urdu poets</p>	

7.	URD 107		2021	Course Outcomes: (1) Understand, What are the Human Values accepted globally. (2) Knowing the importance of Human Values in religious	
8.	URD 201	Rayalaseema ka Sher-o-Adab	2021	Course Outcomes: (1) Have learn about the important historical events of Urdu Poetry. (2) Have knowledge about the most important schools of	
9.	URD 202	Classiki Shairi	2021	Out come (1) Student understands the brief history of Dakani Literature. (2) Student will be able to analyze the writings of Mohd Quli Qutub Shah. (3) Student will learn about the classical genres of Dakani	
10.	URD 203	Hali : Hayat aur Adabi Khidmat	2021	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	
11.	URD 204	Farsi Zaban-o-Adab	2021	Out come (1) Student will know about the classics of Urdu prose. (2) Student will be able to read and understand the text. (3) Student will learn critical awareness of the text.	

12.	URD 205	Ghair Afsanavi Adab	2021	<p>Course Outcomes: (1) Student will be able to read, write and understand simple persian sentences. (2) Acquire Knowledge about the Persian poetic writings of Sa'di, Hafiz and Iqbal. (3) Student will gain brief awareness of Persian literature. Course Outcomes: (1) Specialized in the life and contributions of Faiz Ahmed Faiz. (2) Identify the uniqueness of the poetry of Faiz Ahmed Faiz. (3) Understanding the salient features of the poetry of Faiz Ahmed Faiz.</p> <p>Course Outcomes: (1) Specialized in the life and contributions of SulaimanAtherlaweed</p>	
13.	URD 206 206	Human Values and Professional Ethics –II	2021	<p>Course Outcomes: (1) Awareness of literature written in Rayalaseema. (2) Understand the style of new poets of thisregion. (3) Gain knowledge about two of the pominent prose writers of this area Course Outcomes: (1) Apply the skills of Ilm e bayan and identifying the phrases in poetry. (2) Applying Ilm e Areez skill in poetry.</p>	
14.	URD 207		2021	<p>Course Outcomes: (1) Awareness about Professional Ehics and its categorization. (2) Understand the importance of Professional Ethics in society.</p>	
15.	URD 301	Jadeed Nasr	2021	<p>Course Outcomes: (1) Knowledge about the forms and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to eminent Dakani poets. (2) Understanding Classiki Ghazal and Jadeed Ghazal with</p>	

16.	URD 302	Jadeed Nazm	2021	<p>Out comes</p> <p>(1) Understanding the forms of Urdu Nazm. (2) Critically estimate and explain the art and technique of famous Urdu poets. (3) Knowledge about the distinctive features Urdu Nazm</p>	
17.	URD 303	Urdu Tanqeed	2021	<p>Out come</p> <p>(1) The learner would understand about the mile stones of Urdu Novel. (2) The learner would understand the technical features of Urdu Novel. (3) The learner would understand about the Urdu Novel writers.</p> <p>Out come</p> <p>(1) Knowledge about tradition of Urdu Afsana. (2) Awareness of literary trends and its impact on Urdu Afsana. (3) Identifying and distinguishing the elements in Urdu Afsana</p> <p>Course Outcomes:</p> <p>(1) The learner would understand about the history of computer. (2) The learner would understand the technical features of Urdu computer.</p>	
18.	URD 304 A URD 304 B URD 304 C URD 304 D	(a) Sir Syed ka Khusoosi Mutalea (b) Iqbal ka Khusoosi Mutalea (c) Faiz ka Khusoosi	2021	<p>Course Outcomes:</p> <p>(1) The learner will know about the aims and objectives of the Journalism. (2) Distinguish between writings of news paper, radio and television. (3) The learner will know about the different fields of Urdu journalism.</p>	

19.	URD 305 A URD 305 B URD 305 C	(a) Urdu Ghazal (b) Jadeed Dakani Shairi (c) Urdu Afsana	2021	<p>Course Outcomes:</p> <p>(1) Knowledge about Jadeed Dakani Shairi. (2) Understand Jadeed Dakani Shairi and its vocabulary and diction. (3) Critical awareness about 5 eminent poets of Jadeed Dakani.</p> <p>Course Outcomes:</p> <p>(1) Knowledge about types, techniques and issues of translation. (2) Distinguish between various types of translations. (3) Understand the tradition of Urdu translation and literary</p>	
20.	URD 401	Urdu Drama	2021	<p>Course Outcomes:</p> <p>(1) Knowledge of Basic Linguistics. (2) Awareness about ancient and modern Indo-Aryan languages. (3) Command over origin and evolution of Urdu language.</p>	
21.	URD 402	Adabi Tehreekat aur Rujhanat	2021	<p>Out comes</p> <p>(1) Knowledge about research, types of research and method of research. (2) Distinguish between various types of research writings. (3) Capable for selection of topic, material collection, designing the research work and writing research paper.</p>	

22.	URD 403	Tanz –o- Mizah	2021	<p>Out come (1) Knowledge about Literary criticism. (2) Vies and contributions of Hali and Shibli on literary criticism. (3) Understanding 6 schools of literary criticism.</p> <p>Out come (1) Understand the tradition of Ghari Afsanavi Adab and its salient features. (2) Literary importance of Maktoob Nigare and Inshaiya. (3) Literary importance of Khaka and Safarnama.</p> <p>Course Outcomes: (1) Understand the literary contributions of Altaf Husain Hali. (2) Importance and salient features of Mussadas, Muqaddama & Maqalat. (3) Understand the writing style of Hali as a biographer</p> <p>Course Outcomes: (1) Knowledge about form and tradition of Urdu Ghazal. (2) Understanding Dakani Ghazal with reference to 2</p>
23.	URD 404 A URD 404 B URD 404 C URD 404 D	(a) Urdu Tarjuma Nigari (b) Urdu Marsiya (c) Urdu Khudnavisht	2021	<p>Outcomes: (1) Able to know the history and trends of Telugu, Hindi and English languages. (2) Gain the comparative knowledge of various languages and their literature</p>
24.	URD 405 A URD 405 B URD 405 C	(a) Ibtdayi Urdu (b) Tehqeeq - Tariqekar (c) Urdu Qaseeda	2021	<p>Course Outcomes: (1) Specialized in the contributions of Sir Syed Ahmed Khan. (2) Contributions of Sir Syed Ahmed Khan, as literary person and as a educationist. (3) Understanding the contributions of his literary friends</p> <p>Course Outcomes: (1) Specialized in the contributions of Sir Mohammed Iqbal. (2) Contributions of Allama Iqbal with reference to Bal e</p>

S.V.U. College of Sciences

28. Anthropology

S. No.	Name of the Programme	Course Code	Title of the Course	Years	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1.	M.Sc. Anthropology	ANO : 101	Introduction to Biological Anthropology	2021	<ul style="list-style-type: none"> a. Exposed to the basic concept, meaning and scope of Biological Anthropology b. Explain how human being acts as the central figure of Anthropology c. Elucidate the major divisions of Biological/ physical Anthropology d. Know the inter-relationship between Biological Anthropology and other sciences e. To know how Man evolved in animal kingdom f. To understand how evolution has occurred and what are the evidences of evolution and addresses human variation and the causes of variations
2	M.Sc. Anthropology	ANO : 102	Introduction to Social Cultural Anthropology	2021	<ul style="list-style-type: none"> a. Exposed to the basic introductory background about Socio-cultural Anthropology, its historical background and relation to other branches b. Provides knowledge about the entire

					<p>subject matter of the socio-cultural anthropology as well as its different sub-branches.</p> <p>c. Exposed to social institutions</p> <p>d. Know the religion beliefs, rituals and myth</p>
3	M.Sc. Anthropology	ANO-103	Introduction to Archaeological Anthropology	2021	<p>a. Able to define archaeological anthropology and its branches</p> <p>b. Understand the geological timescale, tool typology and technology</p> <p>c. The Course will explain the basic concepts and terminology used in prehistoric archaeology</p> <p>d. Understand chronological and cultural determinants of Indian and European prehistory</p>
4	M.Sc. Anthropology	ANO-104	Indian Anthropology		<p>a. Exposed to diversified linguistic, Political , ethnic, communal and religious tensions and conflicts national integration.</p> <p>b. Understand the social structure and lifecycle patterns of different past societies</p> <p>c. Understand the caste and varna systems. Learn the major contributions of different Indian Anthropologists to Anthropology</p>
5	M.Sc. Anthropology	ANO-105	Social Problems and Anthropology		<p>a. Exposed to eco-systems, symbiosis and homeostasis.</p>

					<ul style="list-style-type: none"> b. Know about the shifting cultivation and ecological in balance c. Understand the problems and perspectives of Indian peasantry d. Understand the family, Kinship and caste system in India
6	M.Sc. Anthropology	ANO 106	Economic and Political Anthropology	2021	<ul style="list-style-type: none"> a. Able to learn meaning and scope of economic anthropology b. To understand the division of labor by gender and age, exchange of goods and gifts, and to understand the market economy. c. Able to know the historical background of Political Organization besides types and trends of Political Organization including types like i.e. Band, Tribe, Chiefdoms and State d. To know the local institutions: panchayats (traditional and statutory)
7	M.Sc. Anthropology	ANO 107	Human Ecology	2021	<ul style="list-style-type: none"> a. Exposed to the various ecological settings of human habitat . b. Know the ecological evaluation and adaptation. c. To understand the growth and development in various eco-systems d. Understand the Differential Fertility and Mortality, Survival Indices, quality of Life and Fitness.
8	M.Sc. Anthropology	ANO 108	Tribal Development in India	2021	<ul style="list-style-type: none"> a. Exposed to the various constitutional

					<p>safeguard for schedule tribes.</p> <p>b. To understand the various tribal sub planes.</p> <p>c. To know the National Commission for STs, Tribal Advisory Council, Tribal Welfare Department</p> <p>d. To understand the implementation of developmental initiatives</p>
9	M.Sc. Anthropology	ANO-109P	Somatometry & Somatoscopy	2021	
10	M.Sc. Anthropology	ANO 110P	Archaeological Anthropology	2021	
11	M.Sc. Anthropology	ANO 111	Human Values and Professional Ethics -I	2021	
12.	M.Sc. Anthropology	ANO 201	Comparative Ethnography and Indian Anthropology	2021	<p>a. To understand the major ethnological regions of the world</p> <p>b. To know the ethnic and linguistic classifications</p> <p>c. Able to understand the traditional Indian culture</p> <p>d. To know the contributions of Indian anthropologists</p>
13.	M.Sc. Anthropology	ANO 202	Principals of Genetics	2021	<p>a. understand about the scope of genetics and its historical development</p> <p>b. to learn the biology of cell and cell division</p> <p>c. Exposed to the patterns of the inheritance</p> <p>d. Know about blood groups and their anthropological perspective</p>
14	M.Sc. Anthropology	ANO203	Prehistoric India	2021	<p>a. learn the regional distribution of lower, middle, and upper Paleolithic cultures</p>

					<ul style="list-style-type: none"> b. To learn the Mesolithic culture and typo- technology c. Learn the regional distributions of Neolithic cultures d. understand the copper and iron age e. exposed to the distribution of megaliths
15	M.Sc. Anthropology	ANO204	Urban Anthropology	2021	<ul style="list-style-type: none"> a. Exposed to the history of urbanization. b. Understand the environment and ecological processes of urban c. Understand the urbanization and industrialization on cultural complexity d. Understand the relevance of anthropology to urban industry, Business and Corporate Sectors; Urbanization and Social Change in India.
16	M.Sc. Anthropology	ANO205	Fieldwork Traditions	2021	<ul style="list-style-type: none"> a. Exposed to the various field work approaches. b. Know the ethnography, case study and survey methods. c. To understand the participatory rural appraisal (PRA) in India d. Understand the developmental tourism,.
17	M.Sc. Anthropology	ANO 206	Research Methods in Anthropology	2021	<ul style="list-style-type: none"> a. To understand the fieldwork traditions in Anthropology b. To understand the concept of research

					<p>and its purpose</p> <p>c. highlight the conceptual structure of a research design</p> <p>d. understand the various statistical tools in the analysis and interpretation of the data</p>
18	M.Sc. Anthropology	ANO 207	Biology, Health and Disease	2021	<p>a. Exposed to the reproductive health problems and its impact women's health</p> <p>b. To know the Balanced diet, malnutrition, under nutrition Nutritional status and susceptibility to infectious diseases</p> <p>c. Learn about different diseases due to pollution and health hazards</p> <p>d. Understand the problems of ageing and longevity in India.</p>
19	M.Sc. Anthropology	ANO 208	Early Civilizations	2021	<p>a. Understand the Factors Contributing to the Emergence of Civilization and Urbanization.</p> <p>b. To Know about the Indus valley civilizations.</p> <p>c. Exposed to early civilizations of west Asia</p> <p>d. To know the early civilizations in China, South east Asia and in new world.</p>
20	M.Sc. Anthropology	ANO209P	Doing Ethnography	2021	
21	M.Sc. Anthropology	ANO 210P	Craniology and Craniometry	2021	

22	M.Sc. Anthropology	ANO 211	Human Values and Professional Ethics -II	2021	
23	M.Sc. Anthropology	ANB 301	Human Evolution and Fossil Evidence	2021	<ul style="list-style-type: none"> a. Understand the evolutionary trends of primates, prosimians to hominids b. To know the hominid evolution c. To know the Neanderthals distributions and extension d. Exposed to the homo sapiens distribution and feature of human species
24	M.Sc. Anthropology	ANB 302	Human Genetics	2021	<ul style="list-style-type: none"> a. understand the meaning and scope of human genetics b. know methods of studying human chromosomes and chromosomal abnormalities c. depict Inborn errors of metabolism with typical examples and human human ABO blood group system and its fundamentals d. know the concept of “one-gene-one-enzyme hypothesis” which explains development of genetic diseases/disorders caused by defective genes controlling the functions of enzymes in metabolic pathways
25	M.Sc. Anthropology	ANB 303	Anthropological Demography	2021	<ul style="list-style-type: none"> a. Know about the different population growth theories b. Learn the basic demographic variables

					<ul style="list-style-type: none"> c. Understand how the different factors regulates the population growth d. Understand the different demographic models e. Learn the genetic consequences of family planning
26	M.Sc. Anthropology	ANB 304	Forensic Anthropology	2021	<ul style="list-style-type: none"> a. able to know about forensic anthropology, a specialized, applied branch of physical/biological anthropology which deals with the crime investigation b. understand how dermatoglyphic, somatoscopic characteristics and body fluids helpful in crime investigation c. know the use of skeletal remains in forensic investigations d. know the importance of modern methods in crime investigation
27	M.Sc. Anthropology	ANB 305	Epidemiology and Public Health	2021	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology c. Know about Complications of obesity on health its prevention and control d. Understand the complex web of

					biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
28	M.Sc. Anthropology	ANB 306 P	Dermatoglyphics and Human Osteometry	2021	
29	M.Sc. Anthropology	ANB 307	Biostatistics and Computer Applications	2021	<ul style="list-style-type: none"> a. To understand the concept of research and its purpose b. To enlighten the process of research and conceptual structure of a research design c. Understand the disease outcomes through measurement of descriptive, analysis of variance and regression models through computer applications d. Know the use of computers in the analysis data and power point presentation
30	M.Sc. Anthropology	ANB 308	Palaeoanthropology	2021	<ul style="list-style-type: none"> a. understand the geological time scale and Pleistocene epoch b. know about tool making techniques and tool types c. gain knowledge about dating methods d. learn about Paleolithic, Mesolithic and Neolithic cultures in India
31	M.Sc. Anthropology	ANB 309	Fundamentals of Anthropology	2021	<ul style="list-style-type: none"> a. Understand the meaning, scope and relation with other branches of Biological Anthropology. b. Understand the meaning, scope and relation with other branches of Socio-

					<p>Cultural Anthropology.</p> <p>c. Understand the meaning, scope and relation with other branches of Archeological Anthropology</p> <p>d. Exposed to race, ethnicity and racial classification</p>
32	M.Sc. Anthropology	ANB 401	Biological Anthropology	2021	<p>a. Understand the basic concept, meaning and scope of Biological Anthropology</p> <p>b. Know the biological variation in modern human populations</p> <p>c. Understand the human adaptability and impact of urbanization on humans</p> <p>d. Bio-cultural aspects of health and disease</p>
33	M.Sc. Anthropology	ANB-402	Human Population Genetics	2021	<p>Students will</p> <p>a. Explain the basic terms/concepts of human population genetics</p> <p>b. Appreciate the mechanisms of evolutionary forces in shaping biological diversity</p> <p>c. Understand the importance of Hardy – Weinberg Equilibrium especially the gene frequency changes with respect to Mutation, Genetic drift, Selection, Gene flow and to investigate them in empirical situations in human populations</p> <p>d. Know about breeding isolation and its implications in human population</p>

					<p>genetics.</p> <p>e. Understand various mating patterns (inbreeding and types of consanguineous marriages) and measure the inbreeding in families</p>
34	M.Sc. Anthropology	ANB -403	Human Growth, Physique and Nutrition	2021	<p>a. Know about the Differentiate the term growth, maturation and development</p> <p>b. To learn the methods of studying growth and the factors affecting the growth</p> <p>c. To understand the Human Physique and its Relation of Function, Disease and Behavior.</p> <p>d. Know the socio-cultural aspects of nutrition and nutrients in health and diseases</p>
35	M.Sc. Anthropology	ANB -404	Applied Biological Anthropology	2021	<p>a. Know about various applications of anthropometry and kinanthropometry in various fields</p> <p>b. Understand about the importance of forensic anthropology in crime investigations</p> <p>c. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy</p> <p>d. Learn about the human geno project</p>
36	M.Sc. Anthropology	ANB -405	Medical Genetics		<p>a. Understand the overplanting areas of anthropology and genetics, anthropology and medicine (Disease)</p>

					<ul style="list-style-type: none"> b. Understand the different methods of identification genetic diseases c. Know about epidemiology, socio cultural and ecological dimensions of genetic diseases control and treatment Learn the knowledge, attitude and currying practices of genetic diseases
37	M.Sc. Anthropology	ANB-406P	Advanced Biological Anthropology	2021	
38	M.Sc. Anthropology	ANB 407	Fieldwork, Dissertation & Viva-Voce	2021	
39	M.Sc. Anthropology	ANB-408	Epidemiology	2021	<ul style="list-style-type: none"> e. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. f. Understand the global burden of health outcomes and diseases by assessing measures and interpret the prevalence, risk, rate, and odds within the context of epidemiology g. Know about Complications of obesity on health its prevention and control h. Understand the complex web of biological, behavioral, cultural and environmental factors towards the prevalence of communicable infections and chronic infections
40	M.Sc. Anthropology	ANB -409	Applied Biological Anthropology	2021	<ul style="list-style-type: none"> e. Know about various applications of anthropometry and kinanthropometry in various fields f. Understand about the importance of forensic anthropology in crime

					<p>investigations</p> <p>g. Know the importance genetic counseling, genetic screening, Genetic engineering, treatment of genetic diseases and Gene therapy</p> <p>h. Learn about the human geno project</p>
41	M.Sc. Anthropology	ANS 301	Theories of Culture	2021	<p>a. Understand the Conceptual Contributions of E. B. Tylor, B. Malinowski, A. L. Kroeber, L. White, Unilineal Evolution (L. H. Morgan and E. B. Tylor); Multilineal Evolution (J. Steward); Universal Evolution (L. White)</p> <p>b. To know the British School; German-Austrian School; American – Distribution School of culture</p> <p>c. Know the Patterns of Culture (R. Benedict); Basic Personality, Model Personality (Kardiner, Linton, Cora Dubois); Selfhood (Murphy); Symbolic (G. Obeyesekere)</p> <p>d. understand the historical approaches of culture</p>
42	M.Sc. Anthropology	ANS 302	Social Anthropology of Complex Societies	2021	<p>a. Learn the meaning and approach of great and little traditions</p> <p>b. learn about the peasant societies and contemporary peasant societies</p> <p>c. know the culture of poverty, institution and complex societies</p> <p>d. understand problems of urbanization and social changes</p>

43	M.Sc. Anthropology	ANS 303	Ecological Anthropology	2021	<ul style="list-style-type: none"> a. Understand the environment and ecosystem in understanding the cultural modifications b. Know about the cultural ecology, cognitive ecology, single unified ecology, and ethno ecology. c. Learn issues and prospects on development projects and displacement d. Understand Biodiversity for sustainable development Knowabout Ecological protest movements (Chipko and Narmada Bachao Andolan (NBA));
44	M.Sc. Anthropology	ANS 304	Applied Anthropology- Indigenous Communities	2021	<ul style="list-style-type: none"> a. Know the Similarities and Differences between Applied and Action Anthropology, Indigenous communities and applied anthropology. Indigenous rights. b. Know the process of acculturation and assimilation, socialization c. Know about applications of Anthropology in the management of health, agriculture, education and biodiversity and poverty eradication d. Gain the knowledge on tribal welfare, tribal problems, forest and property rights, shifting cultivation and tribal movements
45	M.Sc. Anthropology	ANS 305	Anthropology of Religion Sacred complexes in India	2021	<ul style="list-style-type: none"> a. Know about meaning and relation with power and political leverages, ethnic identity and other aspects of culture in tradition and modern

					<p>societies</p> <p>b. Know the different anthropological theories of religion</p> <p>c. Know the issues of right of food among by Hindus, five symbols of sikh identity, Aspects of sarora ritual and Shamansism, and Christianity in India</p> <p>d. To understand Contemporary issues of religious violence, secularism and fundamentalism</p>
46	M.Sc. Anthropology	ANS 306P	Participatory of Research methods in Development Process	2021	
47	M.Sc. Anthropology	ANS307	Data Management and Computer Applications	2021	<p>a. Know about data Collection entry and management.</p> <p>b. Understand the M.S. Office.</p> <p>c. Exposed in using the SPSS in preparing charts and various advanced statistics</p> <p>d. Understand the excel package in using data analysis</p>
48	M.Sc. Anthropology	ANS 308	Anthropology and Career Promotion	2021	<p>a. Understand the anthropology in competitive examinations</p> <p>b. Know about participatory research appraisal</p> <p>c. Exposed to the issues in tribes, tribal problems and cast populations</p> <p>d. Learn the books to be consulted, review of questions and scheme of valuation</p>

49	M.Sc. Anthropology	ANS 309	Tribal Studies	2021	<ul style="list-style-type: none"> a. Understand the classification and distribution of tribes b. Know the tribal problems like Land Alienation, Indebtedness, Migration, and Cultural Degradation. c. To know the shifting cultivation, tribal education and tribal health d. To know the Fifth and Sixth Schedules Constitutional safeguards
50	M.Sc. Anthropology	ANS 401	Structural Anthropology	2021	<ul style="list-style-type: none"> a. Know the social structure and function of culture b. Understand about the ideal and real social structure and social organization c. Know the general notion of structuralism d. Learn the symbols and structure
51	M.Sc. Anthropology	ANS -402	Developmental Anthropology	2021	<ul style="list-style-type: none"> a. Know about the Concept of Development and Sustainable Development b. Understand the steps in project preparation, goals, process of implementation and monitoring. c. Role of government, NGOs and peoples participation in development d. Know the watershed management and irrigation, resettlement,

					(Narmada) poverty Alleviation (Velugu); Primary Education (VECs
52	M.Sc. Anthropology	ANS-403	Medical Anthropology	2021	<ul style="list-style-type: none"> a. Exposed to the basic concepts in epidemiology with examples of epidemiology in different areas of public health. b. Understand the etiology, control of infections and non-infections diseases c. Understand the ethno-medicine in the management of health and illness behavior d. Understand the modern medical systems and health care delivery services
53	M.Sc. Anthropology	ANS 404	Culture and Management	2021	<ul style="list-style-type: none"> a. Know the concept of organizational culture. Its links with cultural anthropology Organizational ethnography. Anthropology of work b. Understand the Theories of organizational culture. Different anthropological traditions c. Know the How culture affect management Changes in management styles Future outlook. d. To understand the Ethno methodological approaches, Organizational symbolism. Integration, differentiation and fragmentation as three perspective approaches to organizational culture
54	M.Sc. Anthropology	ANS 405	Anthropology of Displaced	2021	<ul style="list-style-type: none"> a. Know the peoples perception towards

			Populations		<p>development and displacement</p> <p>b. Understand the role of government and non-government agencies in the process of displacement, resettlement and rehabilitation.</p> <p>c. Understand policy issues relating development and displacement in legal implications of displacement and rehabilitation</p> <p>d. Learn the Socio-Cultural effects of displacement, Socio disorganization, process of disintegration and reintegration</p>
55	M.Sc. Anthropology	ANS 406p	Non-Governmental and Extension Studies	2021	
56	M.Sc. Anthropology	ANS 407	Fieldwork, Dissertation & Viva-Voce	2021	
57	M.Sc. Anthropology	ANS-408	Visual Anthropology	2021	<p>a. Know about the concept, scope and Historical Development of visual anthropology</p> <p>b. Know about the appraisal of ethnographic films in cultural context</p> <p>c. Knowledge about descriptive studying of Visual data produced by Cultures</p> <p>d. To understand the ethnographical films, still photos film shootings and commentary</p>
58	M.Sc. Anthropology	ANS -409	Environmental Anthropology	2021	<p>a. Know the meaning and scope ecosystem of homeostases, ecological niche and ecosystem development</p>

					<ul style="list-style-type: none"> b. Understand the various theoretical formulations c. Understand Biodiversity for Sustainable Development; Development Projects (Hydro-electric, Irrigation Projects and Industries) and Displacement. d. Exposed to the different ecological issues and environmentalism towards development
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30. Biochemistry

S.No.	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development
1	BCH101	Biochemical and Biophysical methods	2021	<ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
2	BCH 102	Molecular Physiology and community nutrition	2021	<ol style="list-style-type: none"> 1. Gain the knowledge about circulatory and excretory systems. 2. Know the importance of muscular and nervous system. 3. Health benefits and malnutrition of proteins and fats. 4. Know the importance of nutrition in maintenance of health and diseases.
3	BCH 103P	Practical related to	2021	<ol style="list-style-type: none"> 1. Learn safety and precautionary measures for working in a laboratory.

		Biochemical Preparations and Analysis		<ol style="list-style-type: none"> 2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments 3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods. 4. Gain the knowledge about isolation studies of biological samples.
4	BCH 104P	Practical related to Analytical methods	2021	<ol style="list-style-type: none"> A. Learn how to standardize various biomolecules. B. Separate biomolecules by paper chromatography and thin layer chromatography C. Demonstrate separation of protein by electrophoresis. D. Isolation and spectrophotometric characterization of plant pigments.
5	BCH 105P	Human values and Professional ethics-I	2021	<ol style="list-style-type: none"> 1. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions. 2. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom. 3. Know about Purusharthas, Dharma, Artha, Kama, Moksha. 4. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavrata and anuvrata 5. Gain the knowledge about views on Manu and Yajnavalkya
6	BCH 106	Cell and Biomolecules	2021	<ol style="list-style-type: none"> 1. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division. 2. Understand the classification, structure and biochemical reactions of amino acids and proteins. 3. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 4. Understand the concept of structural organization of nucleic acids
7	BCH 201	Energy metabolism	2021	<ol style="list-style-type: none"> 1. Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life. 2. Describe the importance of Electron transport and ATP production mechanism. 3. Gain in knowledge in Carbohydrate metabolism and their associated disorders. 4. Describe the details of lipid metabolism.

8	BCH 202	Metabolism of Nitrogen based molecules	2021	<ol style="list-style-type: none"> 1. Understand the anabolic and catabolic reactions of proteins and aminoacids. 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	BCH 203P	Practical related to Enzymology	2021	<ol style="list-style-type: none"> 1. Learn about estimation of various enzymes in biological sample. 2. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 3. Learn about the factors affecting enzyme activity and determination of K_m. 4. Demonstrate the Immobilization of enzymes.
10	BCH 204P	Practical related to Molecular Biology	2021	<ol style="list-style-type: none"> 1. Isolate nucleic acids from various sources. 2. Estimate the nucleic acids quantitatively. 3. Determine the melting temperature. 4. Determine the purity of DNA by UV method.
11	BCH 205	Human values and Professional ethics-II	2021	<ol style="list-style-type: none"> 1. Easily understand the Components, Structure and responsibilities of family and status of women in family and society. 2. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning. 3. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics. 4. Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population. 5. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy.
12	BCH 206	Enzymology	2021	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis.

				<ol style="list-style-type: none"> Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. Describe the concepts of co-operative behavior and allosteric regulation.
13	BCH 301	Microbial Biochemistry and Genetics	2021	<ol style="list-style-type: none"> Understand the basics of microbiology like nomenclature and classification of microorganisms, understand the various biological and non-biological method to control microorganisms The student will learn about different mode of nutrition in microorganisms and about viruses - Isolation, purification and characterization. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes. Gain knowledge in bacterial genetics includes the different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism(CRISPR) and Describe the various types of mutations and its effect.
14	BCH 302	Molecular Biology	2021	<ol style="list-style-type: none"> The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. Learn about genetic code and their evolution. Gain knowledge in Different stages and components of protein synthesis.
15	BCH 303P	Practical related to Microbiology	2021	<ol style="list-style-type: none"> Handle the microscope. Learn Methods of sterilization and preparation of various culture media, Purification techniques. Identification of isolated bacteria, and Growth curve of microorganism. Learn Staining techniques for bacteria and yeast. Gain knowledge in the Preparation of wine from Grapes. Production and estimation of alcohols, citric acid, lactic acid etc.
16	BCH 304P	Practical related to Clinical Biochemical	2021	<ol style="list-style-type: none"> Collect and maintain the biological samples for clinical assay. Estimate the blood and serum enzymes for diagnosis of diseases.

		Analysis		<ol style="list-style-type: none"> 3. Qualitatively analyse the abnormal constituents in urine. 4. Work with diagnostic kits
17	BCH 305 Generic Elective (Two papers out of three)	<ol style="list-style-type: none"> a) Molecular Endocrinology b) Clinical Biochemistry Cell and Developmental Biology	2021	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
18	BCH 305 B	Clinical Biochemistry	2021	<ol style="list-style-type: none"> 1. Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. 2. Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. 3. Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract. 4. Investigate the serum enzymes in liver
19	BCH-305c	Cell and Developmental Biology	2021	<ol style="list-style-type: none"> 1. Acquire knowledge on basic concepts of Developmental Biology. 2. Gain the proficient knowledge about zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Acquire knowledge about biomembrane concept and various membrane transport systems
20	BCH 306 Open Elective to others	<ol style="list-style-type: none"> a) General Biochemistry 	2021	<ol style="list-style-type: none"> 1. Understand the classification, structure and biochemical reactions of aminoacids and proteins. 2. Describe the classification, structure and biochemical reactions of carbohydrates and lipids. 3. Understand the concept of structural organization of nucleic acids. <ol style="list-style-type: none"> 1. Describe the Structure of porphyrins, Chemistry and functions of water and fat soluble vitamins.

		b)Environmental Biochemistry		<ol style="list-style-type: none"> 2. Students will be able to know how to conserve natural resources for future. 3. Students will be able to describe differing types of <i>ecosystems</i> and their characteristic features. 4. Gain the knowledge about different types of pollution in the environment. 5. Know the Relation between human population and environment. <ol style="list-style-type: none"> 1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research. 2. Learn about basic Radioactivity principles, measurement method and its biological applications. 3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields. 4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques
		c)Experimental aspects related to analytical methods		
21	BCH 401	Genetic Engineering	2021	<ol style="list-style-type: none"> 1. Familiar with the tools and techniques for isolation and purification of genes, vector construction. 2. Understand the mechanisms of regulation of gene expression in different operons. 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research. 5. principle, Bioinstrumentation and applications of spectroscopy techniques.
22	BCH 402	Technical Writing,	2021	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research.

		Biostatistics and Bioinformatics		<ol style="list-style-type: none"> 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in biological sequence analysis
23	BCH 403P	Practical related to Immunology and Hematology	2021	<ol style="list-style-type: none"> 1. Collect the blood samples and handle the microscope. 2. Analyze the blood samples. 3. Expert in immunodiffusion and immunoelectrophoresis techniques
24	BCH 404P	Practical/Project work	2021	
25	BCH 405 Generic Elective	<p>a) Immunology</p> <p>b) Applied Biochemistry</p>	2021	<ol style="list-style-type: none"> a. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced. b. Out line, compare and contrast the key mechanism of innate and adaptive immunity. c. Gain knowledge on undesirable immunological reactions and their complication in health management. d. 4.Apply knowledge in disease diagnosis through serological tests. <ol style="list-style-type: none"> 1.Gain knowledge in Fermentation Technology and industrial production of chemicals. 2. Learn Industrial application of Enzyme Technology. 3. Gain knowledge in Applications of hybridoma technology. 4. Understand the applications of genetic engineering in biotechnology and Genetically Modified Organisms. 5. Understand the Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins; <ol style="list-style-type: none"> 1.Gain knowledge in special features of secondary plant metabolism. 2Know the evolutionary studies Origin of basic biological molecules. 3Understand the Concepts of natural evolution and population genetics.

		c)Plant Biochemistry		
26	BCH 406 Open Elective to others (For other department t students)	a) Research Methodology b) Biochemistry of diseases	2021	<ol style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis <ol style="list-style-type: none"> 1Maintain clinical biochemistry laboratory, biological specimen collection for clinical assay and investigation of disorders associated with carbohydrates. 2Learn and understand the Inborn errors of amino acid metabolism, Lipid metabolism and Renal function system. 3Gain knowledge in clinical enzymology and Disorders of Gastrointestinal Tract. 4.Investigate the serum enzymes in liver diseases
27		C)Nutritional Biochemistry	2021	<ol style="list-style-type: none"> 1. Determine the body composition and body weight by using various methods. 2. To describe the importance of protein and fats. 3. Gain knowledge on vitamins and minerals to maintain health. 4. Aquire knowledge on nutritional importance in different ages in the life

Immuno technology

S.No.	Course Code	Name of the Course	Year of	Activities/Content with direct bearing on
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			introduction	Employability/Entrepreneurship/ Skill development
1	Core 1	Biochemical and Biophysical methods	2021	<p>1. Understand the principle, Instrumentation of different types of Light microscopy, electron microscopy, and techniques of Centrifugation and its applications in various fields of research.</p> <p>2. Learn about basic Radioactivity principles, measurement method and its biological applications.</p> <p>3. Acquire knowledge about the basics and latest developments in the instrumentation techniques of Electrophoresis (IEF, 2D PAGE) and Chromatography and their applications in various research fields.</p> <p>4. Demonstrate skill to explain about principle, Bioinstrumentation and applications of spectroscopy techniques</p>
2	Core 2	Molecular Physiology and community nutrition	2021	<p>5. Gain the knowledge about circulatory and excretory systems.</p> <p>6. Know the importance of muscular and nervous system.</p> <p>7. Health benefits and malnutrition of proteins and fats.</p> <p>8. Know the importance of nutrition in maintenance of health and diseases</p>
3	Core 3P	Practical related to Biochemical Preparations and Analysis	2021	<p>1. Learn safety and precautionary measures for working in a laboratory.</p> <p>2. Develop skill and proficiency in preparation of laboratory reagents and Use of handling of glass wares, minor equipment for conducting experiments</p> <p>3. Acquire practical training for qualitative and quantitative analysis of biological materials/molecules and their estimation using multiple methods.</p> <p>4. Gain the knowledge about isolation studies of biological samples.</p>
4	Core 4P	Practical related to Analytical methods	2021	<p>1. Learn how to standardize various biomolecules.</p> <p>2. Separate biomolecules by paper chromatography and thin layer chromatography</p>

				<p>3. Demonstrate separation of protein by electrophoresis.</p> <p>4. 4. Isolation and spectrophotometric characterization of plant pigments</p>
5	Compulsory Foundation	Cell and Biomolecules	2021	<p>6. Easily understand the difference between prokaryotic and eukaryotic cells, and the concept of cell division.</p> <p>7. Understand the classification, structure and biochemical reactions of aminoacids and proteins.</p> <p>8. Describe the classification, structure and biochemical reactions of carbohydrates and lipids.</p> <p>9. Understand the concept of structural organization of nucleic acids.</p>
6	Elective foundation	Human values and Professional ethics-I	2021	<p>10. Easily understand the Need and Importance of Professional Ethics- Goals- Ethical Values in various Professions.</p> <p>11. Analyse the basic moral concepts- right , ought, duty, obligation, justice, responsibility and freedom.</p> <p>12. Know about Purusharthas, Dharma, Artha, Kama, Moksha.</p> <p>13. Understand the Four Noble Truths- Arya astanga marga, Jainism- mahavratas and anuvratas.</p> <p>14. Gain the knowledge about views on Manu and Yajnavalkya.</p>
7	Core 1	Energy metabolism	2021	<p>Explain the broad outlines of intermediary metabolism and importance of carbohydrate metabolism in life.</p> <p>2. Describe the importance of Electron transport and ATP production mechanism.</p> <p>3. Gain in knowledge in Carbohydrate metabolism and their associated disorders.</p> <p>4. Describe the details of lipid metabolism.</p>
8	Core 2	Metabolism of Nitrogen based molecules	2021	<p>1. Understand the anabolic and catabolic reactions of proteins and aminoacids.</p>

				<ol style="list-style-type: none"> 2. Gain knowledge in the importance of aminoacids as biosynthetic precursors. 3. Know the biosynthesis and degradation of purine and pyrimidines and their associated disorders. 4. How toxic chemicals are metabolised by the body through detoxification and the mechanism of carcinogenicity.
9	Core 3	Practical related to Enzymology	2021	<ol style="list-style-type: none"> 5. Learn about estimation of various enzymes in biological sample. 6. Learn to perform assay of clinically important enzyme: serum acid and alkaline phosphatase, serum LDH. 7. Learn about the factors affecting enzyme activity and determination of K_m. 8. Demonstrate the Immobilization of enzymes
10	Core 4	Practical related to Molecular Biology	2021	<ol style="list-style-type: none"> 1. Isolate DNA from bacterial, plant and animal cells and RNA from yeast cells. 2. Estimate concentrations of DNA and RNA by conventional methods and UV absorption methods. 3. Determine the melting temperature (T_m) of DNA. 4. Learn procedures for isolation of phage M_{13} and single and double standard M_{13} DNA.
11	Compulsory Foundation	Enzymology	2021	<ol style="list-style-type: none"> 1. Distinguish the fundamentals of enzyme properties, nomenclatures, characteristics and mechanisms. 2. Describe the concepts of enzyme inhibition and mechanism of enzyme catalysis. 3. Students will acquaint with mechanism of enzyme action and various coenzymes involved in the biochemical reactions taking place in living systems. 4. Describe the concepts of co-operative behaviour and allosteric regulation
12	Elective foundation	Human values and Professional ethics-II	2021	<ol style="list-style-type: none"> 6. Easily understand the Components, Structure and responsibilities of family and status of women in family and

				<p>society.</p> <p>7. To get an idea on Ethical issues in relation to health care professionals and patients and genetic engineering, Social justice in health care, Human cloning.</p> <p>8. To know about Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.</p> <p>9. Understand the Ethical theory, Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population.</p> <p>10. Gain the knowledge about Organ trade, Human trafficking, Human rights violation and social disparities, Feminist ethics, Surrogacy/ pregnancy</p>
13	Core 1	Microbial Biochemistry and Genetics	2021	<p>1. Understand the basics of microbiology like nomenclature and classification of microorganisms and different modes of nutrition in microorganisms.</p> <p>2. Learn and understand the various biological and non-biological methods to control microorganisms and Biology of subviral agents – Viroids, Prions, Satellite viruses.</p> <p>3. Understand the basics of genetics and the gene arrangement in prokaryotes and eukaryotes.</p> <p>4. Gain knowledge in bacterial genetics like different types plasmids, recombination in bacteria, bacteriophages and bacterial defense mechanism (CRISPR) and various types of mutations and their effects</p>
14	Core 2	Immunology	2021	<p>1. Gain knowledge on different types of antigens, antibodies and how different types of antibodies are produced.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management</p> <p>4. Apply knowledge in disease diagnosis through serological tests</p>
15	Core 3	Practical related to Microbiology	2021	<p>1. Handle the microscope.</p> <p>2. Learn Methods of sterilization and preparation of various</p>

				<p>culture media, Purification techniques.</p> <ol style="list-style-type: none"> 3. Identification of isolated bacteria, and Growth curve of microorganism. 4. Learn staining techniques for bacteria and yeast. 5. Gain knowledge in the Preparation of wine from Grapes. 6. Production and estimation of alcohols, citric acid, lactic acid etc
16	Core 4	Practical related to Immunology	2021	<ol style="list-style-type: none"> 1. Perform RBC, WBC count and differential count. 2. Do all haematological tests that will be done in clinical labs. 3. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 4. Do Heme agglutination tests for identification of different antigens
17	Generic Elective (Two papers out of three)	a) Molecular Biology	2021	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b)Molecular Endocrinology		<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones.
		c)Cell and Developmental Biology		<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion,

				<p>Apoptosis, Senescence, integrins .</p> <p>2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development.</p> <p>3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants.</p> <p>4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis.</p>
18	Open Elective to others (For other department students)	a) Basics of Immunology	2021	<p>1. Gain knowledge on essential features of different types of antigens, antibodies.</p> <p>2. Outline, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation.</p> <p>4. Apply knowledge in disease diagnosis through serological tests.</p>
		b) Immunotechniques		<p>1. To purify and analyse the antigens and antibodies.</p> <p>2. To apply different Hybridization techniques and ELISA, RIA.</p> <p>3. To detect various diseases by application of antiisera.</p> <p>4. To engineer antibodies and catalytic antibodies and produce drugs to allergies</p>
19	Core 1	Microbial Biochemistry and Genetics	2021	<p>1. Familiar with the tools and techniques for isolation and purification of genes, vector construction.</p> <p>2. Understand the mechanisms of regulation of gene expression in different operons.</p>

				<ul style="list-style-type: none"> 3. Know the techniques for transfer and expression of cloned gene and 4. Apply the knowledge of genetic engineering in biological research
20	Core 2	Immunology	2021	<ul style="list-style-type: none"> 1. Discuss the various steps involved in conducting research. 2. Learn to apply hypothesis testing via some of the statistical distributions. 3. Develop understanding about Biological data and database search tools. 4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
21	Core 3	Practical related to Microbiology	2021	<ul style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
22	Core 4	Practical related to Immunology	2021	<ul style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing.

23	Generic Elective (Two papers out of three)	a) Molecular Biology	2021	<ol style="list-style-type: none"> 1. The students will learn about the Possible modes of replication, and roles of helicase, primase, gyrase, topoisomerase, DNA Polymerase, DNA ligase, and Regulation of replication. 2. Learn about the mechanism and regulation of transcription in prokaryotes and eukaryotes. 3. Learn about genetic code and their evolution. 4. Gain knowledge in Different stages and components of protein synthesis
		b) Molecular Biology	2021	<ol style="list-style-type: none"> 1. Know about the mechanism of action of different hormones secreted by hypothalamus, pituitary and pineal glands. 2. Familiar with Iodine, Calcium metabolisms and disorders related to thyroid and parathyroid glands. 3. Know about the mechanism of action of insulin, glucagon and many gastro intestinal hormones. 4. Acquire knowledge on Hormonal regulation of menstrual cycle and disorders associated with Gonadal hormones
		c) Cell and Developmental Biology	2021	<ol style="list-style-type: none"> 1. Acquire knowledge on all cell organelles in prokaryotes and eukaryotes, cell signaling, cell communication, cell adhesion, Apoptosis, Senescence, integrins . 2. Gain the proficient knowledge about basic concepts of Developmental Biology, zygote formation, blastula formation, gastrulation and many events in early development. 3. Understand Organogenesis, limb development and regeneration in vertebrates, and post embryonic development in animals and Plant tissue culture, Protoplast fusion and Production of transgenic plants. 4. Gain knowledge about Miscelle, and liposomes, Membrane fluidity, Active transport, Ionophores Gap junctions, Endocytosis and Exocytosis
24	Open Elective to others	c) Basics of Immunology Immunotechniques	2021	<ol style="list-style-type: none"> 1. Gain knowledge on essential features of different types of antigens, antibodies. 2. Out line, compare and contrast the key mechanism of innate

	(For other department students)			<p>and adaptive immunity.</p> <p>3. Gain knowledge on undesirable immunological reactions and their complications in health management and transplantation.</p> <p>4. Apply knowledge in disease diagnosis through serological tests.</p>
25	Open Elective (b)	<i>Immunotechniques and their Applications</i>	2021	<p>1. To purify and analyse the antigens and antibodies.</p> <p>2. To apply different Hybridization techniques and ELISA, RIA.</p> <p>3. To detect various diseases by application of antiisera.</p> <p>4. To engineer antibodies and catalytic antibodies and produce drugs to allergies.</p>
26	Core 1	<i>Genetic Engineering</i>	2021	<p>1. Familiar with the tools and techniques for isolation and purification of genes, vector construction.</p> <p>2. Understand the mechanisms of regulation of gene expression in different operons.</p> <p>3. Know the techniques for transfer and expression of cloned gene and</p> <p>4. Apply the knowledge of genetic engineering in biological research</p>
27	Core 2	<i>Technical Writing, Biostatistics and Bioinformatics</i>	2021	<p>1. Discuss the various steps involved in conducting research.</p> <p>2. Learn to apply hypothesis testing via some of the statistical distributions.</p> <p>3. Develop understanding about Biological data and database search tools.</p> <p>4. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis.</p>

28	Core 3 P	<i>Practical related to Clinical Immunology, Biostatistics and Bioinformatics</i>	2021	<ol style="list-style-type: none"> 1. Use diagnostic kits to test different types of auto immune diseases. 2. Prepare Rabbit for performance of immunological studies. 3. Perform Single Radial Immunodiffusion. 4. Have an idea on Rocket immunoelectrophoresis, Cross over Immunoelectrophoresis etc. 5. Do Heme agglutination tests for identification of different antigens
29	Core 4	<i>Project Work</i>	2021	<ol style="list-style-type: none"> 1. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 2. Learn structure, function of gene and its transfer methods 3. Develop understanding on cause, spread and control of diseases caused by different microorganisms 4. Get knowledge on collection of data, thesis writing
30	Generic Elective (a)	<i>Clinical Immunology</i>	2021	<ol style="list-style-type: none"> 1. Understand different types of immunity and components of the Immune System. 2. Gain knowledge on auto immune diseases, Animal models used to study them and the treatment for them. 3. Familiar with Clinical manifestation of graft rejection, general immunosuppressive therapy and immune tolerance to allografts. 4. Acquire the knowledge on oncogenes, Psychoimmunology and neuroimmunomodulation
31	Generic Elective (b)	<i>Applied And Molecular Immunology</i>	2021	<ol style="list-style-type: none"> 1. Develop skill in production of monoclonal antibodies. 2. How better enzyme immobilization enhances its activity and their industrial and clinical applications. 3. Familiar with different types of vaccines and how they help in prevention of diseases. 4. Acquire the knowledge on IPR and procedures for patent filing
32	General Elective (C)	<i>Immunopharmacology</i>	2021	<ol style="list-style-type: none"> 1. Understand about drug receptors, pharmacodynamics, pharmacokinetics, drug biotransformation.

				<p>2. Acquire knowledge on Immunomodulation therapy, malignancy therapy.</p> <p>3. Gain knowledge on Prostaglandins, thromboxanes, leukotrienes and inhibitors of these molecules formation.</p> <p>4. Familiar with Nitric oxide and its immunological effects.</p>
33	Open Elective a	<i>Research Methodology</i>	2021	<p>1. Discuss the various steps involved in conducting research.</p> <p>2. Acquire hands on training on various computational tools and techniques.</p> <p>3. Learn to apply hypothesis testing via some of the statistical distributions.</p> <p>4. To acquire knowledge on research proposals and motivate students towards research</p>
34	Open Elective (b)	<i>Immunological Diseases and Therapeutics</i>	2021	<p>1. Maintain the Clinical Immunology lab with all required standards.</p> <p>2. Out line, compare and contrast the key mechanism of innate and adaptive immunity.</p> <p>3. Gain knowledge on different types of immunodeficiencies, their treatment and about autoimmune disorders.</p> <p>4. Familiar with Clinical manifestation in graft acceptance or rejection and how immunosuppressive therapy is useful. And about cancer immunotherapy.</p>

30. Botany

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BOT-101	Algae, Bryophytes, Pteridophytes and Gymnosperms	2021	<p>1. The student able to distinguish different species of lower plant groups.</p> <p>2. Cultivation methods of Algae for industrial production of Single Cell Proteins, Agar Agar ,carragin and Neutraceuticals.Discuss</p>

				the importance of morphological structure, classification, reproduction and economic importance of Algae.
2	BOT-102	Taxonomy of Angiosperms	2021	1) Plant identification skills 2) Herbaria preparation and documentation.
3	BOT-103	Microbiology	2021	1. Isolation and identification of Pathogenic and Non-Pathogenic micro-organisms. 2. Methods of cultivation of economically/industrially important microorganisms. 3. Plant disease identification and control methods.
4	BOT-104	Plant Development and Reproduction	2021	1. Wood formation and types 2. Reproductive structures. Mode of Reproduction
5	BOT-105P	Practical-I Algae, Bryophytes, Pteridophytes and Gymnosperms & Taxonomy of Angiosperms	2021	1) Identification of different Algal forms 2) Morphological description and use of Floral Keys for plant identification.
6	BOT-106P	Practical-II Microbiology & Plant Development and Reproduction	2021	1. Isolation, culture and staining methods for identification of micro-organisms. 2. Diagnosis of Plant diseases based on symptoms and control methods. 3. Histology of vegetative and reproductive structures and isolation
9	BOT-107	Audit Course Human Values and Professional Ethics-I	2021	1. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 2. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. 3. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.
10	BOT-201	Plant Biochemistry and	2021	1) Biosynthesis of plant primary metabolites and chemistry.

		Metabolism		<ol style="list-style-type: none"> 2) Plant physiological processes water relation, plant nutrition and energy metabolism, 3) Metabolic changes in response to biotic and abiotic stress
11	BOT-202	Phytobiodiversity and Conservation	2021	<ol style="list-style-type: none"> 1. Knowledge on Phytodiversity, biodiversity centers and types of Biodiversity. 2. Phytodiversity analysis using Remote sensing 3. Causes for the loss of phytodiversity and conservation strategies.
12	BOT-203	Plant Ecology	2021	<ol style="list-style-type: none"> 1) Concepts of Ecology Students, relation between biotic and abiotic factors in an ecosystem. 2) Interaction between biotic communities and ecological energetics 3) Environmental pollution, Global warming and Environmental protection strategies and green energy production
13	BOT-204	Cell Biology, Genetics and Evolution	2021	<ol style="list-style-type: none"> 1. Knowledge on structure and functions of major plant cell organelles, chromatin organization, Cytoskeleton and cell cycle regulation 2. Genetic basis of inheritance of genes and their mapping in eukaryotes and microbes 3. Theories and process of organic evolution and speciation.
14	BOT-205P	Practical-I Plant Biochemistry and Metabolism & Phytobiodiversity and Conservation	2021	<ol style="list-style-type: none"> 1. Plant metabolite analysis and metabolic enzyme activity 2. Methods for Phytodiversity analysis.
15	BOT-206P	Practical-II Plant Ecology & Cell Biology, Genetics and Evolution	2021	<ol style="list-style-type: none"> 1) Plant communities 2) Methods for analysis of environmental pollutants 3) Designs of waste water treatment plants. 4) Assessment of effect of Global warming on Plant systems 5) Study of chromosomal morphology and behavior in Mitosis and Meiosis

				6) Practical Problem solving on genetic concepts
	BOT-207	Audit Course-II Human Values and Professional Ethics-II	2021	<ol style="list-style-type: none"> 1. Student will know the values of ethics in various fields including medical, social and business ethics. 2. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. 3. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
16	BOT-301	MOLECULAR PLANT PHYSIOLOGY	2021	<ol style="list-style-type: none"> 1. Signal transduction pathways and Senescence 2. Molecular mechanism of Photosynthesis 3. Synthesis and application of Nanomaterials. 4. Molecular Physiology of Stress and Flowering
17	BOT-302	MOLECULAR BIOLOGY AND TECHNIQUES	2021	<ol style="list-style-type: none"> 1. Nucleic acids properties and mechanism of DNA replication and damage repair, and Chromatin organization and Cell Cycle regulation 2. Gene expression, processing of Transcripts and Proteins, and mechanisms of regulation of gene expression in Prokaryotes and Eukaryotes. 3. Principles of Microscopy, Nucleic acid and protein separation and identification techniques and methods
19	BOT-303	MUSHROOM CULTIVATION	2021	<ol style="list-style-type: none"> 1) Identification of types of edible and poisonous mushrooms. 2) Method of cultivation of mushrooms and diseases management
20	BOT-304A	PLANT RESOURCE AND HUMAN WELFARE	2021	<ol style="list-style-type: none"> 1. Food Yielding Plants as a source of food, fiber and timber. 2. Plants used in curing human diseases and other ailments in traditional medical systems and Veterinary diseases 3. Spices and condiments, Non timber forest products. 4. Preparation and application of Bio fertilizers, Bio pesticides, Bio insecticides, mushroom cultivation and plant based preservatives
21	BOT-304B	GARDENING AND	2021	<ol style="list-style-type: none"> 1. Nurseries development and Management, and Garden designing

		NURSERY TECHNIQUES		<ul style="list-style-type: none"> for different plant groups 2. <i>In vivo</i> and <i>in vitro</i> plant propagation methods 3. Plant nutrition and protection 4. Types of gardens and nurseries
22	BOT-304C	ORGANIC FARMING	2021	<ul style="list-style-type: none"> 1. Different types of compost preparation and their Nutritive value. 2. Biofertilizers and organic preparations, their marketing and farm management. 3. Vermicompost Technology
23	BOT-305P	Practical-I Molecular Plant Physiology & Molecular Biology and Techniques	2021	<ul style="list-style-type: none"> 1. Extraction and Estimation of Chlorophyll pigments. 2. Assay of enzyme activity 3. Estimation of Carbohydrate, proteins and separation 4. Seed viability and germination 5. Metabolite accumulation under stress 6. Study of Chromosomal Behavior during Mitosis. 7. Isolation of DNA, RNA and proteins, Quantitative estimation 8. Assignments on DNA structure, Replication and Gene expression.
24	BOT-306P	Mushroom Cultivation	2021	<ul style="list-style-type: none"> 1. Maintenance of mushroom cultivation labs. 2. Process of Mushroom cultivation: 3. Harvesting of mushrooms.
25	BOT-401	Genomics and Proteomics	2021	<ul style="list-style-type: none"> 1. Molecular marker techniques and construction of genetic and physical maps. 2. Whole genome sequencing strategies, and structural and functional annotation. 3. Principles and methods of Transcriptome and Proteome analysis. 4. Mechanisms of evolution of genomes, New genes and proteins and construction of Phylogenetic trees. 5. Structural organization of plant genomes, Arabidopsis and rice genomes and applications of genome projects.
26	BOT-402	Plant Biotechnology	2021	<ul style="list-style-type: none"> 1. Techniques of Plant Tissue Culture and Applications. 2. Process of r-DNA technology

				3. Production of genetically modified crops and Achievements
27	BOT-403	Project work	2021	Identification of problem, review of literature, identification of lacuna, setting of objectives, adoption of standard modern techniques or tools, data collection, analysis of results, and interpretation to provide scientifically valid conclusions. Preparation of thesis. Future scope of research problem
28	BOT-404A	Nanobiotechnology	2021	1. Production of nano scale devices by different methods. 2. Applications of nano devices in medicine and agriculture
29	BOT-404B	Ethnobotany and Plant Drugs	2021	1. Ethnobotanical knowledge 2. Medicinal plant Cultivation, Multiplication, Collection, Processing and Marketing 3. Sources of Plant Medicines, Formulations, Diagnostic features and their Biological activity.
30	BOT-404C	Horticulture	2021	1. Propagation methods for horticultural crops 2. Soil science and fertility management for horticultural crops. 3. Seed production technology of horticultural crops.
31	BOT-405P	Practical- Genomics and Proteomics & Plant Biotechnology	2021	1) Isolation of genomic DNA and RNA; Purification and Quantification by Spectrophotometry. 2) Preparation of DNA denaturation curve 3) Restriction digestion of DNA, Agarose Gel Electrophoresis 4) PCR amplification of DNA. and RAPD analysis. 5) Precipitation of proteins ,Estimation of protein. 6) Determination of Isoelectric Point of proteins 7) Separation of proteins by SDS-PAGE and size determination 8) Problems related to genomics, proteomics and molecular evolution 9) Establishment of callus, organ and cell cultures

31. Biotechnology

	PROGRAMME	COURSE CODE	COURSE TITLE	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	M.Sc. Biotechnology	BTH 101	Structure and Functions of Biomolecules	2021	<ol style="list-style-type: none"> 1. Understand the classification of carbohydrates and their biochemical functions. 2. Correlate the reactions of amino acids that are basis for identification tests and biochemical pathways. 3. Know the structure of different classes of lipids and their roles in biological systems. 4. Comprehend the structure and functions of nucleic acids
		BTH 102	Advanced Tools and Techniques	2021	<ol style="list-style-type: none"> 1. Learn about various techniques for isolation and concentration of macromolecules. They will also understand the principles and applications of different Microscopes

					<ol style="list-style-type: none"> 2. Understand the techniques of chromatography, centrifugation and electrophoresis 3. Achieve a basic understanding of characterization of biomolecules by different Spectroscopic techniques 4. They learn safety measures in handling radioisotopes and familiarize with the various radioisotope trace techniques and their role in biology.
		BTH 103a	Microbiology and diseases	2021	<ol style="list-style-type: none"> 5. Acquire the knowledge of classification and structure of different microorganisms 6. Understand the microbial techniques for isolation, cultivation and maintenance of pure cultures 7. Learn structure, function of gene and its transfer methods 8. Develop understanding on cause, spread and control of diseases caused by different microorganisms
		BTH 103b	Molecular Plant Physiology	2021	<ol style="list-style-type: none"> 1. Explain the detailed characteristics of chloroplast and mechanism of photosynthesis 2. Engineer photorespiration as well as apply other approaches to increase plant biomass 3. Gain the proficient knowledge about structure and functionality chloroplast protein and encoding genes as well as hormonal response on plants

					4. Correlate phytohormone signalling in plant defense mechanism
		BTH 104a	Cell biology and Genetics	2021	<ol style="list-style-type: none"> 1. Differentiate prokaryotic and eukaryotic cell 2. Understand the organization of genetic material in lower and higher organisms 3. Appreciate the mechanism of mitotic and meiotic process and identify the abnormalities 4. Understand the molecular mechanisms of mutations and its importance in evolution
		BTH 104b	Molecular Genetics	2021	<ol style="list-style-type: none"> 1. Recapitulate Mendelian Principles 2. Understand the mechanisms of sex determination 3. Gain knowledge about types of genes 4. Understand the viral genetics
		BTH 105P	Bio-molecules and Advanced Tools and Techniques	2021	<ol style="list-style-type: none"> 1. Acquire the skill to perform experiments related to Biochemical preparations and advanced tools and techniques
		BTH 106P	Microbiology and Cell Biology	2021	<ol style="list-style-type: none"> 1. Obtain the skill to perform experiments related to Microbiology and Cell Biology
		BTH 107 Audit course	Human values and Professional ethics-I	2021	<ol style="list-style-type: none"> 1. Learn the importance of Human values and Professional ethics
		BTH 201	Enzymes and Intermediary Metabolism	2021	<ol style="list-style-type: none"> 1. Gain knowledge on different enzymes and their significance

					<p>2. Correlate how the living organism exchange energy and matter with their surroundings for their survival, and store free energy in the form of energy-rich compounds</p> <p>3. Recognize how the catabolic breakdown of the substances is associated with release of free energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways</p> <p>4. Apply the knowledge of metabolic pathways to biotechnological and biochemical research.</p>
		BTH 202	Molecular Biology	2021	<p>1. Understand the biochemical composition and genome organization in living cells</p> <p>2. Learn about the mechanism of tissue specific transcription and role of RNA polymerases</p> <p>3. Appreciate the correlation of genetic code with protein synthesis in prokaryotic and eukaryotic cells.</p> <p>4. Gain insights of mechanism of gene expression and regulations</p>
		BTH 203a	Immunology	2021	<p>1. Outline, compare and contrast the key mechanism of innate and adaptive immunity</p> <p>2. Apply knowledge in disease diagnosis through serological tests</p> <p>3. Develop skill in production of monoclonal antibodies</p>

					4. Gain knowledge on undesirable immunological reactions and their complications in health management
		BTH 203b	Cancer Biology	2021	<ol style="list-style-type: none"> 1. To understand cancers, the mechanism involved from theory concept, experimental, research and human health-care perspectives 2. To acquire the required experimental skills in cancer biology from research and human healthcare perspectives 2. To develop understanding about principles of carcinogenesis 3. Acquire knowledge on signal targets towards therapy of cancer and Gene therapy
		BTH 204a	Research Methodology, Biostatistics and Bioinformatics	2021	<ol style="list-style-type: none"> 4. Discuss the various steps involved in conducting research 5. Learn to apply hypothesis testing via some of the statistical distributions 6. Develop understanding about Biological data and database search tools 7. Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis
		BTH 204b	Proteomics	2021	<ol style="list-style-type: none"> 1. Handle a proteins and its characterization. 2. Know the principles of proteome quantification.

					<p>3. Demonstrate how various types of mass spectrometers (e.g. Orbitrap, triple-quad, Q-TOF) can be used for proteome quantification, structural determination of proteins by various methods.</p> <p>4. Use software tools to analyse various quantitative proteomic data types. Principles of statistical analysis of proteomic data, how quantitative proteomics can be applied in biology, clinical research and drug discovery and designing novel proteins.</p>
		BTH 205P	Enzymology, metabolism and Molecular Biology	2021	Learn the skill to perform experiments related to Enzymology and Molecular Biology
		BTH 206P	Immunology, Biostatistics and Bioinformatics	2021	Learn the skill to perform experiments related to Immunology and analyze data using various biostatistical methods.
		BTH 207 Audit course	Human values and Professional ethics-II	2021	Learn the importance of Human values and Professional ethics
		BTH 301	Genetic Engineering	2021	<p>1. Familiar with the tools and techniques for isolation and purification of genes</p> <p>2. Acquire knowledge on vectors for construction of genomic libraries and cDNA libraries</p> <p>3. Understand the mechanism of cDNA synthesis</p> <p>4. Know the techniques for transfer and expression of cloned gene and applications of genetic engineering in</p>

					biological research.
		BTH 302	Food and Industrial Biotechnology	2021	<ol style="list-style-type: none"> 1. Acquire knowledge on food preservation, processing and control measures for food poisoning 2. Establish indoor and outdoor cultivation units for algal cultivation 3. Learn effective management of solid waste for energy production. 4. Appreciate the industrial role of microorganisms in production of biomolecules
		BTH 303 a.	Bioprocess Engineering and Technology	2021	<ol style="list-style-type: none"> 1. Handle the axenic cultures of industrially important microbes and appreciate the relevance of microorganisms from industrial context. 2. Gain an overview on design operations and types of fermentation systems 3. Calculate yield and production rates in a biological production process, and also interpret data 4. Apply knowledge on separation and purification of end products of fermentation
		BTH 303 b.	Legal, Ethical and Implications of Biotechnology	2021	<ol style="list-style-type: none"> 1. Develop awareness on types IPR and patenting process 2. Understand legal and ethical controversies in biotechnological innovations

					<ol style="list-style-type: none"> 3. Apply knowledge in providing safety of food, water and environment 4. Gain overview of GM crops and microbes and their impact on environment
		BTH 303 c.	Emerging technologies in Biotechnology	2021	<ol style="list-style-type: none"> 1. Acquire the knowledge about recent trends in stem cell technology and medical applications of stem cells 2. Understand the Biosynthesis of nanomaterials and biomedical applications of nanomaterials. 3. Learn role of antibodies in biosensing and applications of Nano biosensors in medicine, food industry and environmental monitoring. 4. Develop understanding on RNA Technology and its technological applications
		BTH 304 P	Genetic Engineering, Food and Industrial Biotechnology	2021	<ol style="list-style-type: none"> 1. Learn the skill to perform the techniques for transfer and expression of cloned gene and applications of genetic engineering in biological research
		BTH 305	Plant Tissue Culture	2021	<ol style="list-style-type: none"> 1. Learn important milestones in the plant tissue culture and understand the concepts and principles of Plant tissue culture. 2. Learn different pathways of plant regeneration under in vitro conditions – organogenesis, somati

					<p>embryogenesis, synthetic seeds and applications.</p> <ol style="list-style-type: none"> Understand techniques of establishing cell suspension culture, techniques of virus elimination by meristem and shoot tip culture. Acquire skill of propagation of elite medicinal and economically important plants and establish micropropagation unit for commercialization.
		BTH 306a	Bioethics	2021	<ol style="list-style-type: none"> Acquire the knowledge on IPR and procedures for patent filing Understand the Legal and Ethical aspects of gene therapy - cloning Manipulation of human genome Technology transfer. Learn role of Government, Industries and society in promoting, accepting and regulating the rDNA research Develop understanding of Environmental and Health aspects of Biotechnology
		BTH 306b	Bioinformatics	2021	<ol style="list-style-type: none"> Develop understanding about Biological data and database search tools Acquire hands on training on various computational tools and techniques employed in Biological sequence analysis Learn about pathway and enzyme databases, Sequence submission tools Develop understanding on protein

					folding and its significance
		BTH 401	Environmental Biotechnology	2021	<ol style="list-style-type: none"> 1. Learn the relation between biotic and abiotic factors in different ecosystem models and predict how changes in free energy availability affected ecosystems. 2. Appreciate the role of microorganism in biodegradation and pollution detection 3. Develop skill on large scale production and applications of bio pesticide and bio fertilizers fin agriculture 4. Apply knowledge on solid waste management and reclamation o waste water
		BTH 402	Plant Biotechnology	2021	<ol style="list-style-type: none"> 1. Develop skill in production o transgenic plants resistant to biotic and abiotic stress 2. Apply knowledge for industrial production of plant metabolites 3. Cultivate the micro and macro algae o commercial importance on large scale 4. Identify different plant pathogens and apply biological control methods
		BTH 403a	Animal Biotechnology	2021	<ol style="list-style-type: none"> 1. Understand the organization o reproductive organs and advances in contraception research 2. Learn the techniques of In Vitro Fertilization and artificial insemination 3. Develop skill in molecular technique

					for production of transgenic animals 4. Apply knowledge on molecular farming for production of vaccines and hormones
		BTH 403b	Applications of Biotechnology	2021	1.Acquire the knowledge on application of plant, animal and environmental biotechnology 2.Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3.Establish and maintain cell lines for vaccine production 4.Apply knowledge on waste management and recycling for environmental protection
		BTH 403c	Pharmaceutical Biotechnology	2021	1.Gain knowledge on preparation and formulations of different drugs 2. Develop skill on commercial production of pharmaceutical products for human welfare 3. Learn the techniques of drug validation and vaccine production 4. Understand the bioethical principles, values, concepts and social and judicial implications of pharmaceutical biotechnology
		BTH 404P	Environmental Biotechnology, Plant Biotechnology	2021	1.Learn the techniques related to Environmental and Plant biotechnology
		BTH 405	MOOCS/Project	2021	1. Select the appropriate research design

					and develop appropriate research hypothesis for a research project and acquire hands on training on various tools and techniques employed in executing the project.
		BTH 406a	Applications of Biotechnology	2021	<ol style="list-style-type: none"> 1. Acquire the knowledge on application of plant, animal and environmental biotechnology 2. Develop skill on organic farming and preparation of bio pesticides and bio fertilizers 3. Able to establish and maintain cell lines for vaccine production 4. Apply knowledge on waste management and recycling for environmental protection
		BTH 406b	Tools in Biotechnology	2021	<ol style="list-style-type: none"> 1. Acquire the knowledge on analysis of DNA replication to map site specific points of replication 2. Learn to apply DNA microarrays to detect replication origins 3. Understand the functions of helicase and polymerase in DNA replication 4. Acquire knowledge on sophisticated programmed of genome replication

32. Chemistry

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHE - 101	Inorganic Chemistry I	2021	Understanding the key features of coordination compounds,

				<p>Crystal Field Theory, magnetic properties and bonding in transition metal complexes.</p> <p>The polymorphic forms of Carbon, Sulphur and Phosphorus, synthesis and properties of sulphur-nitrogen compounds, boranes, carbides, silicates and to know Wades rules.</p> <p>Learning the reactivity of complexes in terms of Valence bond and Crystal Field theories, Taube's classification, Trans effect and Electron Transfer Reactions.</p> <p>Gaining knowledge on synthesis and structures of different metal carbonyls, synergistic effect and 18 electron rule.</p>
2	CHE - 102	Organic Chemistry I	2021	<p>Gaining knowledge on stereochemical structures of the molecules, stereoselective and stereocontrolled reactions.</p> <p>Ascertaining the stereochemistry of the products with the effect of neighbouring group participation and to familiarize the various types of aromatic substitution reactions, their mechanism and the effect of substituents.</p> <p>Understanding the concept of isotope effects, potential energy diagrams and transition states in different intermediates.</p> <p>Familiarized with stereospecific synthesis of naturally occurring terpenoids and degradation products of terpenoids.</p>
3	CHE - 103	Physical Chemistry I	2021	<p>Understanding the concepts such as Operator algebra, Eigen values and Eigen functions, Degeneracy, Schrodinger wave equation and the postulates of Quantum Mechanics.</p> <p>Learning theories of reaction rates, Lindemann, Lindemann-Hinshel wood, and RRKM theories.</p> <p>Thermodynamic concepts and entropy change in reversible</p>

				<p>process and irreversible process, Gibbs- Duhem equation, calculation of thermodynamic properties.</p> <p>Thermodynamic and Kinetic Derivation of Nernst Equation and the derivation of Debye-Huckle Equation and its Verification</p>
4	CHE -104 (A)	General Chemistry I	2021	<p>Gaining Knowledge on mean and median values, standard deviation and coefficient of variation</p> <p>Acquainting knowledge on principle and instrumentation of AAS and difference between flame AAS and furnace AAS.</p> <p>Understanding principle and concept of ecosystem and their functioning</p> <p>Getting an idea on environmental pollution and environmental impact assessment.</p>
5	CHE -104 (B)	General Chemistry I	2021	<p>Familiarizing on green reaction conditions and their impact on environment.</p> <p>Gaining knowledge on use of different biocatalysts as environmentally friendly reagents.</p> <p>Acquainting on the use of modern techniques like ultrasound, microwave etc.</p> <p>Getting an idea on the use of ionic liquids in different reactions.</p>

6	CHE 105 A & B	Core practical I: Inorganic & Physical Chemistry	2021	<p>Knowing the mastery of basic semi-micro qualitative analysis of simple salts and interprets analytical data and will make scientific claims that are supported by the observations</p> <p>Familiarizing with techniques of titration and calculation of errors.</p> <p>Understanding the determination of critical solution temperature, eutectic composition, distribution coefficient,</p>
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				adsorption of different systems. Calibrating the statistical data
7	CHE 106A & B	Core practical I: Organic & General Chemistry	2021	familiarizing the systematic procedures of analysis of organic components. Getting knowledge on the conformational tests for various functional groups. Understanding the mechanisms and familiarize with methodologies to prepare biologically important molecules. Purification of compounds by different process
8	CHE 107	Human Values and Professional Ethics-I	2021	Learning about the needs and importance of professional ethics. Analyzing nature of Values, basic Moral Concepts character and Conduct. Gaining knowledge on individual and society ethical values, ahimsa, satya and brahmacharya. Understanding values of Bhagavd Gita, various religions, religious tolerance, Gandhian ethics.
9	CHE - 201	Inorganic Chemistry II	2021	Familiarizing with the general methods of complex preparations and properties, nature of bonding and structural features of metal complexes. Learning about Russel-Saunders coupling, splitting of energy levels in octahedral field and differentiate between Orgel diagrams and Tanabe-Sugano diagrams. Understanding about the laws of Hund's, Curie and Weiss, magnetism and magnetic susceptibility determination by Gouy's and Faraday methods. Gaining knowledge on Induced reactions, Free radical reactions, Thermal decomposition reactions, Chain reactions.
10	CHE-202	Organic Chemistry II	2021	Familiarizing the mechanisms of E_1 , E_2 and E_{1CB} reactions,

				<p>stereoselectivity and synpyrolytic eliminations and use of isotopes, chemical trapping and crossover experiments.</p> <p>Learning the rearrangements involving electron deficient carbon, nitrogen and oxygen atoms and electron rich carbon atom and familiarize with the limitations and applications of reactions.</p> <p>Knowing synthesis of three and four membered heterocycles, mechanism of ring opening reactions and the effect of electron donating and withdrawing substituents in selectivity of ring opening reactions.</p> <p>Understanding the structural elucidation and synthesis of alkaloids using specific reagents.</p>
11	CHE -203	Physical chemistry II	2021	<p>Learning about Pauli Exclusion principle and Slater determinant, atomic orbitals, Simple molecular orbitals and Huckel theory of conjugated systems.</p> <p>Knowing Gibbs adsorption isotherm, BET equation and correlate limitations, critical micellar concentration (CMC) and factors affecting the CMC of surfactants.</p> <p>Identifying Relation between order of a finite group and its sub-group, conjugacy, Symmetry point group (MLS, MHS and MSS) and orthogonality theorem.</p> <p>Acquiring knowledge on DC-Polarography, AC-Polarography, Controlled Potential Electrolysis, to derive equation for Tafel plots, half-wave potentials for reversible system.</p>
12	CHE-204 A	General Chemistry II	2021	<p>Acquiring knowledge on ion selective electrodes, solid membrane electrodes and glass electrodes and principles of amperometric titrations.</p> <p>Learning general principles and classifications of chromatographic separations and applications of TLC, GLC</p>

				<p>and HPLC.</p> <p>Knowing about biodiversity, ecosystem diversity and conservation of biodiversity.</p> <p>Acquiring knowledge on natural resources related to food, water, mineral, energy and land.</p>
13	CHE 204B	Chemistry in Contemporary Society	2021	<p>Familiarizing knowledge in pharmaceutical chemicals</p> <p>Gaining knowledge with blood fluids, blood, enzymes and forensic</p> <p>Knowing about fermentation, detection of purity, beverages</p> <p>Acquiring knowledge on gaseous fuels, soil ingredients and analysis of trace elements</p>
14	CHE 205 A & B	Core practical I: Inorganic & Physical Chemistry	2021	<p>Developing skills to separate and determine the two component mixtures</p> <p>Acquiring knowledge in the preparation of metal complexes</p> <p>Studying the determination of cell constant and verification of Onsagar equation, strength of strong acid by Titration of a strong acid with a strong base and vice versa</p> <p>Getting knowledge on the applications of conductometry, potentiometry, coulometry and pHmetry.</p>
15	CHE 206A & B	Core practical I: Organic & General Chemistry	2021	<p>Familiarizing with binary mixture separation</p> <p>Gaining hands-on-experience in purification of the components, preparation of derivatives.</p> <p>Getting knowledge about the chemical behavior of different components and mechanisms</p> <p>Purification and calibration of data</p>
16	CHE 207	Human Values and professional ethics-II	2021	<p>Understanding the concepts of human values, responsibilities of family values and status of women in family and society.</p> <p>Acquiring knowledge on different medical ethics the views of charaka and sushruta on moral responsibilities of medical practitioners.</p>

				<p>Gaining knowledge on social ethics and understand the characteristics of ethical problems in management.</p> <p>Familiarizing environmental ethics, ethical theory and ecological crisis.</p>
17	CHE-AC- 301	Inorganic Spectroscopy and Thermal Methods of Analysis	2021	<p>Understanding about TG and DTA and applications of different scanning calorimetry.</p> <p>Gaining knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy.</p> <p>Learning zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR.</p> <p>Knowing about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy.</p>
18	CHE-AC 302	Organic Spectroscopy and Applications	2021	<p>Getting experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds.</p> <p>Familiarizing with the absorption bands of the molecules with specific functional groups</p> <p>Experience to interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided</p> <p>Acquiring knowledge about specific fragmentation rules of different molecules which are unique.</p>
19	CHE-AC-303A	Organic Chemistry III	2021	<p>Familiarizing with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules.</p> <p>Gaining knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p>

				Understanding diastereoselectivity, stereoselectivity and substrate controlled auxiliary controlled reactions Acquiring knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
20	CHE-AC-303B	Physical Chemistry III	2021	Understanding the determination of Character Coordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle. Learning the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals. Studying the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy. Studying the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
21	CHE AC 304	Core practical I: Analytical Chemistry- Practical	2021	Familiarizing the basic principles of instrumental methods of analysis. Gaining knowledge on chemistry of alloys. Understanding the complexity, theory and working principle of colourimetry Familiarizing with laws of colorimetric titrations.
22	CHE AC 305A	Chemotherapy and Drug Analysis	2021	Knowing about the classification and synthesis of drugs. Familiarizing with the qualitative and quantitative analysis of drugs.
23	CHE AC 305B	Instrumental Methods of Analysis	2021	Understanding the complexity, theory and working principle of colourimetry. Gaining knowledge on analysis of organic components
24	CHE AC 306	Spectral Techniques	2021	Knowing the basic principles of spectroscopy. Familiarizing with the analysis of various functional groups by using different spectroscopic techniques.

				<p>Understanding the applications of AAS.</p> <p>Gaining knowledge about Mass spectral fragmentation of organic compounds and common functional groups.</p>
25	CHE AC 306	Chromatographic Techniques	2021	<p>Understanding the stationary and mobile phases in chromatographic techniques.</p> <p>Familiarizing applications of different chromatographic methods.</p> <p>Understanding the principle of chromatographic techniques.</p> <p>Gaining knowledge on the normal phase and reverse phase.</p>
26	CHE-EC- 301	Inorganic Spectroscopy and Thermal Methods of Analysis	2021	<p>Knowing about TG and DTA and applications of different scanning calorimetry.</p> <p>Gaining knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy.</p> <p>Learning zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR.</p> <p>Knowing about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy.</p>
27	CHE-EC 302	Organic Spectroscopy and Applications	2021	<p>Getting experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds.</p> <p>Familiarizing with the absorption bands of the molecules with specific functional groups</p> <p>Experience to interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided</p> <p>Acquiring knowledge about specific fragmentation rules of different molecules which are unique.</p>
28	CHE-EC-303A	Organic Chemistry III	2021	<p>Familiarizing with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules.</p>

				<p>Gaining knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p> <p>Understanding diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions</p> <p>Acquiring knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.</p>
29	CHE-EC-303B	Physical Chemistry III	2021	<p>Knowing the determination of Character Co-ordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle.</p> <p>Learning the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals.</p> <p>Studying the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy.</p> <p>Studying the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>

30	CHE EC 304	Core practical I: Environmental Chemistry - Practical	2021	<p>Understanding the basic idea on techniques of water analysis and acidity alkalinity</p> <p>Getting experience with the calculations of BOD and COD</p> <p>Understanding the basics of soil analysis viz. pH, Conductivity</p> <p>Acquiring an experience on the determination of heavy metals in soil</p>
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31	CHE EC 305A	Chemotherapy and Drug Analysis	2021	Knowing about the classification and synthesis of drugs. Familiarizing with the qualitative and quantitative analysis of drugs.
32	CHE EC 305B	Instrumental Methods of Analysis	2021	Knowing about the potentiometric analysis of mixtures of acids and halides Familiarizing with the Flame photometric analysis of Na, K, and Li
33	CHE EC 306	Spectral Techniques	2021	Knowing the basic principles of spectroscopy. Familiarizing with the analysis of various functional groups by using different spectroscopic techniques. Understanding the applications of AAS. Gaining knowledge about Mass spectral fragmentation of organic compounds and common functional groups.
34	CHE EC 306	Chromatographic Techniques	2021	Knowing the stationary and mobile phases in chromatographic techniques. Familiarizing applications of different chromatographic methods. Understanding the principle of chromatographic techniques. Gaining knowledge on the normal phase and reverse phase.
35	CHE-IC- 301	Inorganic Spectroscopy and Thermal Methods of Analysis	2021	Knowing about TG and DTA and applications of different scanning calorimetry. Gaining knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy. Learning zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. Knowing about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron spectroscopy.
36	CHE-IC 302	Organic Spectroscopy and Applications	2021	Getting experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds. Familiarizing with the absorption bands of the molecules

				<p>with specific functional groups</p> <p>Experience to interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided</p> <p>Acquiring knowledge about specific fragmentation rules of different molecules which are unique.</p>
37	CHE-IC-303A	Organic Chemistry III	2021	<p>Familiarizing with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules.</p> <p>Gaining knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p> <p>Understanding diastereoselectivity, stereoselectivity and substrate controlled auxiliary controlled reactions</p> <p>Acquiring knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.</p>
38	CHE-IC-303B	Physical Chemistry III	2021	<p>Familiarizing the determination of Character Coordinate of C_{2v} point group based on 3N Coordinates and to learn the Mutual exclusion Principle.</p> <p>Learning the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals.</p> <p>Studying the rigid rotator model, Stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy.</p> <p>Studying the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
39	CHE IC 304	Core practical I:	2021	<p>Knowing the synthesis of inorganic complexes Tris</p>

		Inorganic Chemistry - Practical		thiourea Zinc (II) Sulphate, Tris thiourea Copper(I) Sulphate, Hexamine nickel (II) Chloride, Chloropentamine cobalt (III) Chloride Gaining knowledge on characterization techniques Getting experience on the preparation of Mercury tetrakis thiocyanato cobaltate (II) Sodium trioxalato ferrate (III) Familiarizing with the characterization of complexes.
40	CHE IC 305A	Chemotherapy and Drug Analysis	2021	Learning about the classification and synthesis of drugs. Familiarizing with the qualitative and quantitative analysis of drugs.
41	CHE IC 305B	Instrumental Methods of Analysis	2021	Understanding the complexity, theory and working principle of colourimetry. Gaining knowledge on analysis of organic components.
42	CHE IC 306	Spectral Techniques	2021	Knowing the basic principles of spectroscopy. Familiarizing with the analysis of various functional groups by using different spectroscopic techniques. Understanding the applications of AAS. Gaining knowledge about Mass spectral fragmentation of organic compounds and common functional groups.
43	CHE IC 306	Chromatographic Techniques	2021	Knowing the stationary and mobile phases in chromatographic techniques. Familiarizing applications of different chromatographic methods. Understanding the principle of chromatographic techniques. Gaining knowledge on the normal phase and reverse phase.
44	CHE-IC-303A	Organic Chemistry III	2021	Familiarizing with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules. Gaining knowledge in the synthesis of different organometallic reagents and also stereo and regio

				<p>specificity and selectivity of reactions with organometallic reagents</p> <p>Understanding diastereoselectivity, stereoselectivity and substrate controlled auxiliary controlled reactions</p> <p>Acquiring knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.</p>
45	CHE OC 306	Spectral Techniques	2021	<p>Getting experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds.</p> <p>Familiarizing with the absorption bands of the molecules with specific functional groups</p> <p>Experience to interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the</p> <p>Acquiring knowledge about specific fragmentation rules of different molecules which are unique.</p>
46	CHE-OC-303A	Inorganic Spectroscopy and Thermal Methods of Analysis	2021	<p>Knowing the basic principles of instrumental methods of analysis.</p> <p>Gaining knowledge on chemistry of alloys.</p> <p>Understanding the complexity, theory and working principle of colourimetry</p> <p>Familiarizing with laws of colorimetric titrations.</p>
47	CHE-OC-303B	Physical Chemistry III	2021	<p>Knowing the determination of Character Co-ordinate of C_{2v} point group based on $3N$ Coordinates and to learn the Mutual exclusion Principle.</p> <p>Learning the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals.</p> <p>Studying the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy.</p>

				Studying the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions
48	CHE OC 304	Core practical I: Organic Estimations - Practical	2021	Gaining knowledge about the estimation/percent purity of different organic molecules. Getting hands-on-experience with the synthesis and determination of concentrations and purity. Acquiring knowledge in handling of toxic chemicals in estimation process. Gaining experience in the calculating the percentage purity.
49	CHE OC 305A	Chemotherapy and Drug Analysis	2021	Knowing about the classification and synthesis of drugs. Familiarizing with the qualitative and quantitative analysis of drugs.
50	CHE OC 305B	Instrumental Methods of Analysis	2021	Acquiring knowledge in handling of toxic chemicals in multistep preparation of biologically important molecules in good percentage of yield. Gaining experience in the proposal of synthetic routes to functionalized derivatives.
51	CHE OC 306	Spectral Techniques	2021	Studying the basic principles of spectroscopy. Familiarizing with the analysis of various functional groups by using different spectroscopic techniques. Understanding the applications of AAS. Gaining knowledge about Mass spectral fragmentation of organic compounds and common functional groups.
52	CHE OC 306	Chromatographic Techniques	2021	Knowing the stationary and mobile phases in chromatographic techniques. Familiarizing applications of different chromatographic methods. Understanding the principle of chromatographic techniques. Gaining knowledge on the normal phase and reverse phase.

53	CHE-PC-301	Physical Chemistry III	2021	<p>Knowing the determination of Character Co-ordinate of C_2V point group based on 3N Coordinates and to learn the Mutual exclusion Principle.</p> <p>Learning the Bragg conditions-Miller Indices- Laue method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals.</p> <p>Studying the rigid rotator model, stark effect, vibration-rotation spectroscopy, PQR branches, selection rules and Vibrational- rotational Raman spectroscopy.</p> <p>Studying the concepts on heat of dissolution, regular solution theory, Hildebrand solubility parameter, concept of Flory-Huggins theory of polymer solutions</p>
54	CHE-PC 302	Organic Spectroscopy and Applications	2021	<p>Getting experience to calculate λ max values for dienes, enones, polyenes, aromatic and heteroaromatic compounds.</p> <p>Familiarizing with the absorption bands of the molecules with specific functional groups</p> <p>Experience to interpret the data to different types of protons and carbons present in a molecule so as to ascertain the structure of the molecule based on the data provided</p> <p>Acquiring knowledge about specific fragmentation rules of different molecules which are unique.</p>
55	CHE-PC-303A	Organic Chemistry III	2021	<p>Familiarizing with the specific functions of the reagents particularly diazomethane, N-bromosuccinimide, Ziegler Natta catalyst, 1,3-dithianes and Merrifield resin in the synthesis of a variety of complex molecules.</p> <p>Gaining knowledge in the synthesis of different organometallic reagents and also stereo and regio specificity and selectivity of reactions with organometallic reagents</p> <p>Understanding diastereoselectivity, stereoselectivity and substrate controlled auxillary controlled reactions</p>

				Acquiring knowledge about the reagents which causes oxidation in various compounds and also the reagents that causes selective and complete reductions to synthesize various compounds.
56	CHE-PC- 304	Inorganic Spectroscopy and Thermal Methods of Analysis	2021	Knowing1 about TG and DTA and applications of different scanning calorimetry. Gaining knowledge on Doppler shift and chemical shift, basic principles and applications of NQR spectroscopy. Learning zero field splitting and Kramer's degeneracy, relaxation processes, instrumentation and applications of ESR. Knowing about photoelectric effect and Koopmans theorem and impart the applications of X-ray and UV photoelectron.
57	CHE PC 304	Core practical I: Inorganic spectroscopy and thermal methods of analysis	2021	Studying chemical kinetics of homogeneous solutions Gaining knowledge on the determination of different cations by flame photometry Understanding the principle and working aspects of conductometric titrations Acquirinng knowledge on the implementation of colorometric estimations.
58	CHE PC 305A	Chemotherapy and Drug Analysis	2021	Knowing about the classification and synthesis of drugs. Familiarizing with the qualitative and quantitative analysis of drugs.
59	CHE PC 305B	Instrumental Methods of Analysis	2021	Understanding the principle and working aspects of conductometric titrations Acquiring knowledge on the implementation of colorometric estimations.
60	CHE PC 306	Spectral Techniques	2021	Knowing the basic principles of spectroscopy. Familiarizing with the analysis of various functional groups by using different spectroscopic techniques. Understanding the applications of AAS. Gaining knowledge about Mass spectral fragmentation of

				organic compounds and common functional groups.
61	CHE PC 306	Chromatographic Techniques	2021	<p>Knowing the stationary and mobile phases in chromatographic techniques.</p> <p>Familiarizing applications of different chromatographic methods.</p> <p>Understanding the principle of chromatographic techniques.</p> <p>Gaining knowledge on the normal phase and reverse phase.</p>
62	CHE-AC- 401	Quality Control and General Principles	2021	<p>Able to diagnose problems in the quality improvement process and Explain each total quality implementation phase</p> <p>Knowing about theoretical basis for the use of organic reagents in inorganic analysis.</p> <p>Understanding different types of kinetic methods and their evaluation and to determine the kinetics of enzyme</p> <p>Understanding the oxidation reactions with Ce (IV) sulphate solutions and applications of complexometric titrations</p>
63	CHE-AC 402	Instrumental Methods of Analysis	2021	<p>Understanding the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF).</p> <p>Understanding the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).</p> <p>Getting knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis.</p> <p>Improving the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I₂ liberations and Ce⁴⁺ liberation in solutions</p>

64	CHE-AC-403A	Applied and Environmental Aspects	2021	<p>Getting an idea about preparation of sampling, decomposition, separation and preconcentration of metal ions etc.</p> <p>Gaining experience on agrochemicals and fertilizers and their analysis.</p> <p>Having an idea on the analysis of fuels, alloys and explosives</p> <p>Experiencing with environmental pollution monitoring techniques.</p>
65	CHE-AC-403B	Bioinorganic, Bioorganic, Biophysical Chemistry	2021	<p>Gaining knowledge on metallo proteins in electron transfer processes.</p> <p>Knowing the applications of trace metal ions and metal ions as chelating agents in medicine.</p> <p>Achieving and developing highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.</p> <p>Understanding thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters.</p>
66	CHE AC 404	Core practical I: Analytical Chemistry- Practical	2021	<p>Understanding the common laboratory techniques including separation techniques</p> <p>Polarography, atomic absorption spectroscopy in both emission and absorption mode.</p> <p>Gaining knowledge on implementation of gas chromatography and HPLC for separation of mixtures.</p> <p>Familiarizing with interpretation of data to structures by NMR.</p>
67	CHE AC 405A	Project Work	2021	<p>Performing experiments, collection and evaluation of data.</p> <p>Interpretation of results while adhering to scientific principles of responsible and ethical behaviour.</p> <p>Analysing and compiling the data and results in a chronological order in the form of dissertation.</p>

				Preparation of dissertation.
68	CHE AC 406A	Drug Chemistry	2021	Knowing about natural products. Knowing Interpretation of cardiovascular drugs. Knowing the Analyzing about prostaglandins. Knowing the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
69	CHE AC 406	Electro analytical Techniques	2021	Knowing how to interpret potentiometry and conductometry Knowing the Interpretation of results while adhering to DC Polarography. Knowing the Analysing and compiling the data and results in polarography . Familiarizing Types of ion sensitive electrodes.
70	CHE-IC- 401	Co-ordination Compounds, Organometallic Chemistry & Chemistry of Non-transition Elements	2021	Gaining an extensive knowledge about dinitrogen complexes of Ru(II), Os(II),Co(I), Mo(0)and dioxygen complexes of Ir(I) and Rh(I) and on cycloheptatriene and tropylium complexes of oxidative, reductive elimination reactions Understanding mechanism, stereochemical aspects and regeneration of catalyst in olefin hydrogenation (Wilkinson's catalyst), olefin oxygenation (Wacker process or Smidt reaction), Olefin hydroformylation and Fischer – Tropsch process. Studying the examples of metal complexes having metal-metal single or multiple bonds and analyse the spectroscopic evidences for the presence of metal-metal bond. Understanding the synthesis and structures of boranes, carboranes, borazines, silicates carbides, peroxy compounds and inter halogens, pseudo halides.
71	CHE-IC 402	Instrumental Methods of Analysis	2021	Understanding the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-ray fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF).

				<p>Understanding the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).</p> <p>Getting knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis.</p> <p>Improving the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions.</p>
72	CHE-IC-403A	Instrumental Methods of Analysis	2021	<p>Understanding the working principles, instrumentation and applications of ICP-AES and ICP-MS, energy dispersive X-fluorescence (EDXRF), Wavelength dispersive X-ray fluorescence (WDXRF).</p> <p>Understanding the basic principles, procedure and components of the High-Performance Liquid Chromatography (HPLC), Gel Permeation Chromatography (GPC): Capillary Electrophoresis (CE), Supercritical Fluid Chromatography (SFC).</p> <p>Getting knowledge on instrumentation and applications of GCMS in drug analysis and environmental samples analysis.</p> <p>Improving the knowledge about coulometric techniques and their analysis of cations (As (III), Fe (II)) and anions (I⁻ and S²⁻) by using I² liberations and Ce⁴⁺ liberation in solutions.</p>
73	CHE-IC-403B	Bioinorganic, Bioorganic, Biophysical Chemistry	2021	<p>Gaining knowledge on metallo proteins in electron transfer processes.</p> <p>Knowing the applications of trace metal ions and metal ions as chelating agents in medicine.</p>

				Achieving and develop highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. Understanding thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters.
74	CHE IC 403	Core practical I: Inorganic Chemistry - Practical	2021	Understanding the common laboratory techniques including separation techniques. Polarography, atomic absorption spectroscopy in both emission and absorption mode. Gaining knowledge on implementation of gas chromatography and HPLC for separation of mixtures. Familiarizing with interpretation of data to structures by NMR.
75	CHE IC 404	Project Work	2021	Having ability to perform experiments, collection and evaluation of data Interpretation of results while adhering to scientific principles of responsible and ethical behaviour. Analysing and compiling the data and results in a chronological order in the form of dissertation. Preparation of dissertation.
76	CHE IC 406A	Drug Chemistry	2021	Knowing about natural products. Knowing Interpretation of cardiovascular drugs. Knowing the Analyzing about prostaglandins. Knowing the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
77	CHE IC 406 B	Electro analytical Techniques	2021	Gaining ability to interpret potentiometry and conductometry Interpretation of results while adhering to DC Polarography. Analysing and compiling the data and results in polarography. Familiarizing Types of ion sensitive electrodes.
78	CHE-OC- 401	Organic synthesis I	2021	Familiarizing with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents Learning about photolytic reactions of carbonyl compounds,

				<p>conjugated carbonyl derivatives, olefins, conjugated dienes. Gaining knowledge in the determination of allowed or forbidden of chemical reactions <i>viz.</i>, cycloaddition and Learning the methods of preparation, properties, and industrial applications of various addition and condensation Familiarizing with the unique reactivity of Boron, Phosphorus, Sulfur and Silicon reagents</p>
79	CHE-OC 402	Organic Synthesis II	2021	<p>Familiarizing with functionalization and interconversion of functional groups and the concept of organic synthesis by retrosynthetic approach. Gaining knowledge in the formulation of synthetic routes for naturally occurring drugs. Understanding quinoline, acridine and guanidine group of alkaloids as antimalarials and to familiarize with the role of functioning of broad spectrum antibiotics. Acquiring knowledge about the classification, properties, structure & conformation and biological functions of peptides/proteins.</p>
80	CHE-OC-403A	Heterocycles and Natural Products	2021	<p>Familiarizing with the synthetic routes of five membered heterocycles with two heteroatoms and to justify the site of Acquiring knowledge on the synthetic methodologies of benzofused and six membered heterocycles and the effect of Familiarizing with the structural elucidation and synthesis of naturally occurring steroids and hormones Knowing about isolation, structural determination and synthesis of flavonoids and isoflavonoids.</p>
81	CHE-OC-403B	Bioinorganic, Bioorganic, Biophysical Chemistry	2021	<p>Gaining knowledge on metallo proteins in electron transfer processes. Knowing the applications of trace metal ions and metal ions as chelating agents in medicine. Achieving and developing highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.</p>

				Understanding thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters.
82	CHE OC 404	Core practical I: Spectral Identification of Organic Compounds	2021	Calculating λ max values. Ascertaining functional groups. Interpreting the spectral data to the structure and stereochemistry of the molecules. Analysing the fragmentation pattern of the molecules.
83	CHE OC 405	Practical II: Project Work	2021	Identifying the problem, to collect the literature and understanding parameters to design the problem. Performing experiments to synthesize the molecules with desired stereochemistry adopting modern techniques. Collection and interpretation of the data to the structures. Presentation of the data in the form of dissertation.
84	CHE OC 406A	Drug Chemistry	2021	Knowing about natural products. Knowing Interpretation of cardiovascular drugs. Knowing the analyzing about prostaglandins. Knowing the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
85	CHE OC 406	Electroanalytical Techniques	2021	Getting ability to interpret potentiometry and conductometry Interpretation of results while adhering to DC Polarography. Analysing and compiling the data and results in polarography. Familiarizing Types of ion sensitive electrodes.
86	CHE-PC- 401	Electrochemistry	2021	Knowing the techniques of deposition of metals, throwing power simultaneous discharge of cations and methods of corrosion protection Learning about electrochemical Batteries, fuel cells and nickel-cadmium batteries. Understanding electrical double layer systems, sedimentation potential, null points of metals and zeta potential. Calculating electrochemical parameters; familiarize mixed

				ligand systems and reversible systems.
87	CHE-PC 402	Thermodynamics, Polymers and Solid-state Chemistry	2021	Deriving Gibbs Duhem equation and to calculate fugacity and chemical potential. Calculating excess free energy and entropy, to draw Hildebrand curves and to correlate excess functions and activity coefficients Learning morphology, T _m and T _g points and to calculate transition temperatures and to identify cross linking in polymers. Identifying magnetic properties of solids, magnetic materials, superconductors and BCS theory
88	CHE-PC-403A	Chemical Kinetics	2021	Drawing skrabal pH diagram and to separate unimolecular and bimolecular reactions Studying laws of photochemistry, to derive stern-volmer equation Identifying chromo potentiometry points and to investigate kinetic currents and isotopic effects Learning photochemical thresholds, chemiluminescence
89	CHE-PC-403B	Bioinorganic, Bioorganic, Biophysical Chemistry	2021	Gaining knowledge on metallo proteins in electron transfer processes. Knowing the applications of trace metal ions and metal ions as chelating agents in medicine. Achieving and developing highly stereoselective synthesis of organic compounds and drugs by adopting environmentally. Understanding thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters.
90	CHE PC 404	Core practical I: Inorganic Chemistry - Practical	2021	Getting ability to perform titration of mixture of halides and to draw potentiometry curves Learning amperometric titrations and mixtures by polarography Correlation of data obtained from IR, AAS, HPLC and GC Determination of alkanility and purity by pH metry

91	CHE PC 404	Project Work	2021	Identifying research problems and to collect research literature Proposing hypothesis of a research problem Performing research experiments Analysing the data and conclude the research outcomes
92	CHE PC 406A	Drug Chemistry	2021	Knowing about natural products. Knowing Interpretation of cardiovascular drugs. Knowing the Analyzing about prostaglandins. Knowing the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
93	CHE PC 406	Electroanalytical Techniques	2021	Getting ability to interpret potentiometry and conductometry Interpretation of results while adhering to DC Polarography. Analysing and compiling the data and results in polarography. Familiarizing Types of ion sensitive electrodes.
94	CHE-EC- 401	Energy, Environment and Soil	2021	Knowing about nuclear fission and fusion, uses of solar energy in space heating and water heating, hydropower and water heating, hydropower and production of ethanol from indirect solar energy. Learning physical and chemical properties of water and water complexation in natural and waste water and to understand about global warming, ozone depletion, green house effect and acid rains. Acquiring knowledge on composition of inorganic and organic contaminants in soil, soil corrosion and industrial applications of green chemistry. Getting knowledge on various methods of solid waste collection and its disposal.
95	CHE-EC 402	Water Pollution Monitoring and Environment Laws	2021	Acquiring knowledge on disease causing agents in water. Learning about the removal of suspended and dissolved solids present in waste water. Understanding different uses of micro-organisms in

				<p>environmental protection.</p> <p>Knowing different world life acts such as forest conversion act, water control pollution act and air prevention and control act.</p>
96	CHE-EC-403A	Air Pollution, Control Methods- Noise and Thermal Pollution	2021	<p>Acquiring knowledge on air pollutants, air pollution sampling measurements and analysis caused due to sulphur dioxide, carbon monoxide, nitrogen dioxide, oxidants, ozone, hydro carbons and particulate matter.</p> <p>Learning about different control methods and adsorption of solids and liquids, gas analysis eluents viz., nitrogen oxides, carbon monoxide and hydrocarbons.</p> <p>Understanding pollution caused by vehicle emission, different industries, cement plants, steel mills and petroleum refineries.</p> <p>Knowing about noise and thermal power project pollutions and their effect on human health.</p>
97	CHE-EC-403B	Bioinorganic, Bioorganic, Biophysical Chemistry	2021	<p>Gaining knowledge on metallo proteins in electron transfer processes.</p> <p>Knowing the applications of trace metal ions and metal ions as chelating agents in medicine.</p> <p>Achieving and developing highly stereoselective synthesis of organic compounds and drugs by adopting environmentally.</p> <p>Understanding thermodynamics of biopolymer reactions and to correlate free energy and biopolymer parameters.</p>
98	CHE EC 404	Practical I	2021	<p>Knowing the basic principles of conductometry and analysis of acids and halides.</p> <p>Colorometric estimation of iron and manganese.</p> <p>Having an idea about working principles of IR, AAS, Spectrofluorimetry, Gas chromatography and HPLC.</p> <p>Familiarizing with interpretation of data</p>
99	CHE EC 405	Practical II:Project Work	2021	<p>Identifying research problem, propose the hypothesis and to collect literature.</p>

				Performing research designs & experiments Tabulating research results Concluding research outcomes in the form of dissertation.
100	CHE EC 406A	Drug Chemistry	2021	Knowing about natural products. Knowing Interpretation of cardiovascular drugs. Knowing the Analyzing about prostaglandins. Knowing the Definition, Classification, Nomenclature, Structure and Synthesis of anti-inflammatory drugs.
101	CHE EC 406	Electroanalytical Techniques	2021	Gaining ability to interpret potentiometry and conductometry Interpretation of results while adhering to DC Polarography. Analysing and compiling the data and results in polarography. Familiarizing Types of ion sensitive electrodes.

33. Environmental Sciences

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ENV-101	Ecology and Environment	2021	<ul style="list-style-type: none"> • Provide solutions to environmental problems using appropriate tools and techniques. • Develop both a quantitative and qualitative understanding of interactions between organisms and their consequences. • Gain the knowledge of functions of organisms and ecosystem.
2	ENV -102	Environmental Chemistry	2021	<ul style="list-style-type: none"> • Demonstrate knowledge of chemical and biochemical principles of fundamental

				<p>environmental processes in air, water and soil.</p> <ul style="list-style-type: none"> • Apply basic chemical concepts to analyze chemical processes involved in different environmental problems. • By knowing pollution levels in the environment best possible fresh environment can be created in different methods like afforestation, natural parks and sanctuaries etc., for human concern.
3	ENV-103P	Practical – I	2021	<ul style="list-style-type: none"> • Imparting practical knowledge about estimation of pH, Total Dissolved Solids, Hardness and Dissolved Oxygen, Chlorides and Sulphates in water samples.
4	ENV-104P	Practical-II	2021	<ul style="list-style-type: none"> • Understanding of various alkalinities present in the water sample by volumetric titration linked with theory. • By knowing water pollution potable water can be drawn out and wastewater can be treated. • By knowing various fertility of the soil can be known which is advantage to farmers for agriculture.
5	ENV-105	Environmental Toxicology and Public Health	2021	<ul style="list-style-type: none"> • To understand the role of toxicants in environment, methods used to quantify toxicity, regulations that govern toxic substances and assessment of risks posed by exposure to toxicants. • Inform, educate, and empower people about the potential hazards of toxic substances to environmental and human health. • By knowing the adverse health problems on

				human beings, safety, preventing measures can be implemented endemic and pandemic diseased can be controlled.
6.	ENV-106	Biodiversity and Conservation and Management	2021	<ul style="list-style-type: none"> • Systematically understand biodiversity and its vital role in ecosystem function. • Understand the value of biodiversity and current threats to biodiversity. • Describe Environment of nature.
7	EN-201	Energy and Environment	2021	<ul style="list-style-type: none"> • Explain the key challenges and technologies in energy use, utilization of energy resources, energy conversion and environmental consequences. • They explain basic competence regarding environmental impacts arising from different energy carriers and technical solutions. • Enrichment of ecosystem will be achieved.
8.	ENV-202	Environmental Pollution	2021	<ul style="list-style-type: none"> • Analyze sources of pollution, exposure pathways, fate and evaluate consequences of human exposure to pollution and its impacts to environmental quality. • Distinguish the effect of pollutants on human health, economy and wild environments. • Pollution free environment for human life will be achieved.
9.	ENV-203P	Practical-I	2021	<ul style="list-style-type: none"> • Describe the amount of pesticide/insecticide in water/vegetable samples. • To find concentration levels of toxicant by use of instrumental techniques

				<ul style="list-style-type: none"> • To estimate physicochemical assessments in different water samples
10.	ENV-204P	Practical-II	2021	<ul style="list-style-type: none"> • Identify the concentration of biochemical by using instrumental methods. • To find an amount of LC50 of various metals in organism. • To estimate the growth rate of fauna at various habitat condensations.
11	ENV-205	Instrumental Techniques and Applications	2021	<ul style="list-style-type: none"> • Integrate a fundamental understanding of the underlining physics principles as they relate to specific instrumentation used for atomic, molecular, and mass spectrometry, magnetic resonance spectrometry and chromatography. • Environmental potentiality will be achieved. This is indirect benefits to the society. • To understand the analysis and level of concentration of different metals through instrumental techniques.
12	ENV-206	Environmental Laws, Policies and Legislation	2021	<ul style="list-style-type: none"> • Understanding judicial response to environmental issues in India. • Acquire the ability to evaluate the role of law and policy in conservation and management of natural resources and prevention of pollution.
13	ENV -301	Waste Treatment and Management	2021	<ul style="list-style-type: none"> • Describe the components of solid waste management and the laws governing it. • Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes. • Biodegradation of waste through natural and artificial methods will be achieved.

14	ENV -302	Environmental Assessment, Audit and Economics	2021	<ul style="list-style-type: none"> • Explain the concepts about the Environmental Impact Assessment (EIA) and describe the environment laws, aims and the necessity of EIA. • Critically examine assumptions inherent in impact assessment, examine a range of environmental impact assessments and identify and explore impact assessment fields and approaches. • Understand the sustainable development and controlling environmental pollution.
15	ENV -303	Practical-I	2021	<ul style="list-style-type: none"> • Understand the degradation of natural resources by constructions of various projects. • Understand requirement of oxygen for growth of organisms to break down organic matter in wastewaters. • Describe the low cost wastewater treatment practices in water demand areas.
16	ENV-304	Basics of Statistical Methods and Computer Programmes	2021	<ul style="list-style-type: none"> • To provide an understanding on statistical concepts include measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing and multiple regression. • To define quantity of data, organize and summarize the data. • To provide computing ability to design for solution with appropriate requirements. • To provide skill in computing knowledge.
17	ENV-305A	Ecotourism and Eco-restoration	2021	<ul style="list-style-type: none"> • Describe the challenging in Eco-Tourism and wildlife tourism. • Understand values of wildlife and minimizing

				<p>impact on natural ecosystem due to tourism.</p> <ul style="list-style-type: none"> • It is joyful to public and society; Government economy also will be generated.
18	ENV-305B	Occupational Health and Industrial Safety	2021	<ul style="list-style-type: none"> • To provide knowledge in understand hazardous material in industrial area. • To understand general health education and surveillance. • To identify unrecognized hazardous materials in and around factory.
19	ENV-305C	Statistics, Computer Applications and Modeling	2021	<ul style="list-style-type: none"> • Analyze data using standard statistical techniques. • Utilize the Internet Web resources and evaluate on-line e-business system. • Environmental analysis, forecasting of the environment can be achieved.
20	ENV-306A	Natural Resources Conservation	2021	<ul style="list-style-type: none"> • Apply theories and methods with interdisciplinary approach towards natural resource management. • Critically examine the gap in the resource availability, use and conservation. • In conservation of the environment, employment can be generated.
21	ENV-306B	Environmental Education and Sustainability	2021	<ul style="list-style-type: none"> • Demonstrate an integrative approach to environmental issues with a focus on sustainability. • Communicate complex environmental information to both technical and non-technical audiences. • Students will be enriched about the nature.

22	ENV-401	Water Resources and Watershed Management	2021	<ul style="list-style-type: none"> • Understand water's importance as a precious resource. • Provide a basic understanding of the impact of water and water-related issues in a global, economic, environmental and societal context. • Describe the management of water resources through construction of watersheds for future generations.
23	ENV-402	Remote Sensing and GIS	2021	<ul style="list-style-type: none"> • Building a foundation for understanding Remote Sensing and Geographic Information System (RS-GIS) as a powerful tool for geospatial analysis. • Appreciate the application of RS-GIS techniques to the matrices of environment and Resource management. • Future predictions of the environment will be known about weather, cyclones and research etc.,
24	ENV-403	Practical-I	2021	<ul style="list-style-type: none"> • Analyze the multi elements in various wastewater samples. • Understand the rain water harvesting practices. • Identify the water bodies and evaluate effective sensors and advance technique to extract and mapping the features for various applications.
25	ENV-404	Project Work and Comprehensive Viva-Voce	2021	<ul style="list-style-type: none"> • Understand project characteristics and various stages of a project. • Estimate and cost the human and physical resources required and make plans to obtain the necessary resources.

				<ul style="list-style-type: none"> • It helps to develop in contextualization of knowledge, critical thinking and can lead to new innovation ideas.
26	ENV-405 A	Disaster Mitigation and Management	2021	<ul style="list-style-type: none"> • Understand the mitigation approaches, their choices and alternatives. • Develop foundations for hazard, risk and vulnerability assessment.
27	ENV-405 B	Environmental Safety	2021	<ul style="list-style-type: none"> •
28	ENV-405 C	Environmental Management and Sustainable Development	2021	<ul style="list-style-type: none"> • Ability to analyze environmental management in relation to the major principles of sustainable development. • The ability to work effectively to create environmental management analysis outputs of professional quality, both independently and within team environments.
29	ENV-406 A	Forest Resources and Management	2021	<ul style="list-style-type: none"> • Demonstrate knowledge of forest vegetation modeling and the ability to forecast its development over time using models of forest growth. • Integrate knowledge of basic biology, physical sciences, forest and wildlife ecology, and social sciences into the stewardship of forest resources. • Through forest management national economy will be improved.
30	ENV-406 B	Global Environmental Issues	2021	<ul style="list-style-type: none"> • Predicting the consequences of human actions on the web of life, global economy and quality of human life. • Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and

				<p>sustainable development.</p> <ul style="list-style-type: none"> • International issues will be understood.
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34. Fishery Sciences & Aquaculture

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	AQC 101	Concepts of Aquatic Ecology	2021	<p>i. Understanding the General Characteristics, Principles of classification, Aquatic Ecology Communities.</p> <p>ii. To understand the various Physical and chemical characteristics of water.</p>
2	AQC 102	Systematics And External Anatomy of Cultivable Organisms	2021	<p>i. Understand the concepts of finfish and shellfish systematics and anatomy.</p> <p>ii..</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
3	AQC 103 A	Fish Nutrition and Water Quality Management	2021	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective</p>

				<p>to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p>
4	AQC: 103 B	Environmental Monitoring and Bio deterioration	2021	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>ii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii. Students would be trained in various tools and techniques used to gain insight into biological processes.</p> <p>iv. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <p>(1) more individuals are produced than can survive;</p> <p>(2) There is therefore, a struggle for existence</p> <p>(3) Individuals within a species show variation</p> <p>(4) Offspring tend to inherit their parental characters.</p>
5	AQC- 104A	Coastal Aquaculture	2021	<p>i.The students will learn about chemical bonding</p>

				<p>patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
6.	AQC 104 B	: Ornamental Fish Culture	2021	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
			2021	
7.	Practical-1 AQC 105	Identification and Morphology of Cultivable Organisms	2021	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will</p>

				<p>acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
8.	Practical-2 AQC106	Fish Nutrition	2021	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p> <p>ii. Students world gain expertise in</p>

				<p>understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
9.	AQC 107	Human Values and Professional Ethics – I	2021	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p>
10.	AQC 201	Principles of Aquaculture	2021	<p>i. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p>

				<p>ii. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>iii. Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iv. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p>
11	AQC 202	Physiology of Cultivable Organisms	2021	<p>i. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p> <p>ii. The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>iii. An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii. Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv. Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>

12	AQC 203A	Fresh Water Aquaculture	2021	<p>i. Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii. Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.</p>
13	AQC 203B	Capture fisheries	2021	<p>i. Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii. Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii. After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
14	AQC 204 A	Fishery Economics, Extension and Environmental Management	2021	<p>i. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p>

				<p>ii. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
15	AQC 204 B	Limnology	2021	<p>i. Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>iv. Students would gain basic knowledge of the underlying principles and practical strategy of</p>

				the analytical and preparative techniques that are fundamental to study and understanding of life processes.
16	Practical-1 AQC205	Soil and Water Characteristics	2021	<p>i. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>ii. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>iii. Students learn about enzymes. Their classification and nomenclature</p> <p>iv. Students learn about specificity of enzymes</p> <p>v. Students learn about measurement of enzymatic activity</p> <p>vi. Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p>
17	Practical-2 AQC206	Physiology of Fin Fish and Shell Fish	2021	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p>

				<p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a microtome.</p>
18	AQC 206	Human Values and Professional Ethics – II (Audit course)	2021	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
19	AQC 301	Microbiology and Fish Pathology	2021	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like</p>

				<p>Mean deviation and Standard deviation and Coefficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
20	AQC 302	Fish Immunology	2021	<p>i. Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii. To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii. Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
21	AQC: 303A	Cell Biology and Genetics	2021	<p>i. To understand the different pathogens causing disease in man.</p> <p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>

22	AQC 303 B	Bioinformatics In Aquaculture	2021	<p>i. Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii. Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p> <p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
23	Practical's AQC 304	Microbiology and Fish Diseases	2021	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p> <p>ii. Students learnt and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e. Amino acids and Peptides.</p>
24	Skill oriented course AQC 305	Fish Nutrition Technology	2021	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will</p>

				learn about novel categories of insecticides that may be compatible with other control strategies. iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.
25	Open Elective (For other department students)	a)AQC 306A: Fish Processing Technology b) AQC306B: Pollution and Toxicology	2021	i. Learnt about structure, function and organization of Neurons in the Central nervous system ii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials. iii. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny. iv. Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effectively communicate with both specialist and non-specialist audiences/community.
26	AQC 401	Aquaculture Biotechnology	2021	i. Skill development in environmental and occupational Toxicology. ii. It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain. iii. Identification of different routes of exposure of environmental toxins. iv. The students will learn handling of the pesticides in crop protection and understand the

				<p>therapy and antidotes at the time of poisoning.</p> <p>v. To understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>vi. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vii. To understand how to conserve the wild animals</p>
27	AQC402	Essentials Of Biochemistry	2021	<p>i. Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii. This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p> <p>v. Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>vi. Classify the nutritional types of microorganisms and measure microbial growth</p> <p>vii. Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p>

				viii. Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.
28	AQC403A	Computer Applications, Information Technology And Biostatistics In Aquaculture	2021	<ul style="list-style-type: none"> i. Understand the overview of Animal Behavior and prominence of social organization in insects and primates ii. Gained lot of information on different types of Learning phenomenon and their mechanisms. iii. To understand the how to conserve wild animals and management strategies. iv. To gain the knowledge about wild animals and animal products importance.
	AQC403B	Aquaculture Engineering		
29	Practical's AQC 404	Biotechnology And Biochemical Estimations	2021	<ul style="list-style-type: none"> i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism. ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways. iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.
30	Multidisciplinary course/ project work AQC405	Project Work / Fieldwork	2021	<ul style="list-style-type: none"> i. This course exposes students to the applications of genetic engineering in biological research. ii. Students will be able to perform basic genetic engineering experiments at the end of course. iii. Students will acquire knowledge of advances

				in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.
31	Open Elective (For other department students) AQC 406(A)	General Principles and Practices of Aquaculture	2021	<ul style="list-style-type: none"> i. Understand the evolution of protein structural motifs and domains and associate this with function; ii. Use on-line structural databases and tools to predict the properties, structure and function of proteins. iii. Understand and explain enzyme mechanisms in a structural context. iv. Describe mechanisms of protein folding and the roles of natively unstructured proteins in biology. v. Understand how cross-talk between proteins and post-translational protein modifications (e.g. phosphorylation, ubiquitination) facilitate information processing in cells.
32	AQC 406 (B)	Fish Breeding and Hatchery Management	2021	<ul style="list-style-type: none"> i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections ii. Provides knowledge on the physiological mechanisms leading to diseased conditions. iii. Students gains knowledge on the pathogenesis and transmission of infectious diseases. iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.

35. Geography

S. No .	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	GEG - 101	Geomorphology	2021	<ul style="list-style-type: none"> • Explain principal terms, definitions and theories in geomorphology. • Explain the interior structure of the earth and geological time scale. • Assess the cause and effect of disturbances in/on the earth. • Explain different theories and models for landscape evolution with time. • Describes the landform and landform processes in different climatic zones and tectonic regimes. • Compare and discusses the formation of large scale landforms involving both exogenous and endogenous processes. • Know how human, physical and environmental components of the world interact.
	GEG - 102	Cartography	2021	<ul style="list-style-type: none"> • Explain the importance of advanced cartography in map making and presenting. • Acquire good knowledge about different procedure of map making and various projection system of map making by developing broad knowledge about latitude, longitude, meridians, parallels etc. • Developing their quantitative application in geographical study which gives more accuracy in any geographical enquiry which can further helps students in conducting research activities. • Perform map layout and map interpretation for any geographical area. • Acquire knowledge of different method of surveying and map making by using proper tools and technique and can apply this knowledge in future research works.
	GEG – 103(A)	Economic Geography	2021	<ul style="list-style-type: none"> • Explain the importance of economic geography in analyzing the societies and economies work. • Explain and apply key concepts and theoretical approaches in economic geography.

				<ul style="list-style-type: none"> • Discuss and critically evaluate these concepts and theoretical approaches. • Students will become sensitized to concept of resources. • Students will become sensitized the classification of resources. • Learn about use and misuse of resources. • Will learn conservation methods and techniques. • Showing an awareness and responsibility for the environment. • Apply these concepts and theoretical approaches to key social and economic issues in the context of global economy. • Discuss policy options for overcoming inequality and uneven development in the globalizing world
	GEG – 103(B)	Human Geography	2021	<ul style="list-style-type: none"> • Apprise the students to various aspects of human resources and their importance. • Illustrate basic concepts and key theoretical approaches in population. • Describes migration and its impact on the regional human resources.
	GEG – 103(C)	Environmental Geography	2021	<ul style="list-style-type: none"> • Gain the knowledge on environmental aptitude • Familiarize with concepts, issues, approaches about physical and social environment. • Acquainted with contemporary environmental problems and challenges. • Familiarized the knowledge on Ecosystem, Biomes, food chain and hydrological cycle.
	GEG – 104(A)	Oceanography	2021	<ul style="list-style-type: none"> • Examine and compare the different ocean and water bodies with their distinct oceanic bottom relief, circulation system and marine deposits • Improve the knowledge on Coral reefs and their formation theories..
	GEG – 104(B)	Computer Basics for Geography	2021	<ul style="list-style-type: none"> • Understand computer concepts and principles. • Examine and compare the different computer programmes and usage of computers to geographical studies • Improve the knowledge on computer net workings
	GEG – 104(C)	Regional Geography	2021	<ul style="list-style-type: none"> • Understand re- organization of Andhra Pradesh and its new

		of Andhra Pradesh		<p>physical, climate and drainage aspects. .</p> <ul style="list-style-type: none"> • Obtain the knowledge of demographic, irrigation and major crops. • Understand Andhra Pradesh mineral and industrial aspects with transportation. • Improved knowledge on the transportation and communication aspects of Andhra Pradesh
	GEG – 105	Map Projections	2021	<ul style="list-style-type: none"> • Explain the concept of map, scale and projection • Student can explain the purpose of projection • The main outcome of this course is students can able to select different projection for different geographical areas
	GEG – 106	Techniques of Mapping and map analysis	2021	<ul style="list-style-type: none"> • Students can able to Represent the landforms with contour lines • Student can perform profiles which are drawn from landforms through contours • Student can represent the slope analysis models • Students can able to understand how to represent the data through different diagrams and graphs
	GEG - 201	Climatology	2021	<ul style="list-style-type: none"> • Obtain the knowledge on fundamentals of atmospheric phenomena, global climate systems and climate change. • Understand the atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change. • Grasp the techniques for modeling the climate, covering both theoretical and technical aspects. • Understand the dynamics of the atmosphere, the ocean and the overall climatologically system. • Able to analyze and interpret climatic data and classification of climate

	GEG - 202	Geographical Thought	2021	<ul style="list-style-type: none"> • Understand the evolution of geography over the decades. • Students will demonstrate an advanced understanding of the historical development of geographical studies. • They can understand the major current philosophical and theoretical debates in geography. • Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in their specialty areas. • Students will develop a solid understanding of the concepts of “space,” “place” and “region” and their importance in explaining world affairs. • Improve knowledge on the quantitative revolution in the geographical studies.
	GEG – 203(A)	Principles of Remote Sensing	2021	<ul style="list-style-type: none"> • Understand the principles of remote sensing and its techniques. • Student will be able to know the apply the technique of remote sensing in varies fields. • Student can apply the knowledge in getting authentic data by performing pre and post analysis in aerial remote sensing. • Student will analysis the changes on earth surface with the image interpretation and visual interpretation techniques. • With the sound knowledge on the process, principles, effecting factors, techniques of Remote sensing student can understand interpretation of the data in much more accurate.
	GEG – 203(B)	Geography of Tourism	2021	<ul style="list-style-type: none"> • Understand the evolution of tourism geography over the decades. • Students will demonstrate understanding of the tourism and economic importance. • They can understand the tourism impact on the HRD. • Students will develop a concrete understanding of tourism and infrastructural need
	GEG – 203(C)	Industrial Geography	2021	<ul style="list-style-type: none"> • Understanding about industrial Geography.

				<ul style="list-style-type: none"> • Can familiarize the students with industrial location theories, in industrial geography. • Improve the knowledge on industrial classification. • Enhance knowledge on industrial regions and imbalances in India.
	GEG – 204(A)	Physical Geography of India	2021	<ul style="list-style-type: none"> • Conceptualize the elements of physical features of Indian geography. • Visualize and recognize the major topographical, geological, soil and natural vegetation regions of India. • examine the various issues, problems and challenges associated with these physical regions.
	GEG – 204(B)	Regional Geography of India	2021	<ul style="list-style-type: none"> • Developed the art of regionalization technique while focusing about diversity of Indian region. • visualized and recognized about regional identities and socio-cultural dimension of regionalization to address the issues and concern needed for regional planning.
	GEG – 204(C)	Social and Cultural Geography	2021	<ul style="list-style-type: none"> • Assess the casual role of Geography in production of different social groups and shaping of their unique features. • Evaluate the emerging social spaces, stratification, social well being, and issues of social justice through spatial perspective.
	GEG – 205	Interpretation of Topographical (S.O.I., U.S and O.S) and Weather Maps	2021	<ul style="list-style-type: none"> • Explain the elements, scale and numbering of Topographical maps • Analyse and interpret the physical and cultural features from Indian, U.S and O.S Toposheets. • Explain the elements of weather maps and analyse and interpret the weather maps
	GEG – 206	Research Techniques	2021	<ul style="list-style-type: none"> • Keeping in view the nature of data and purpose of study and to make a rational choice amongst listed various statistical methods. • Students shall know how to organize, manage, and present data. • Understand and use different research techniques in their researches and day to day needs. • Use different agricultural methods in their research and needed situations.

	GEG – 301	Urban Geography	2021	<ul style="list-style-type: none"> • Learn the concept of urban settlements and evolution of urban population and to provide concept of Urban studies. • Understand the cause and effects of growth in urban population • Explains the theories involved in classifications of towns and relationship between towns and cities and their population. • Distinguish patterns of Worldurbanization with reference to India.
	GEG – 302	Geographical Information System (GIS)	2021	<ul style="list-style-type: none"> • Understand the evolution of GIS. • focus on collection, analyzing, interpretation andresenting the data related to Earth. • Differentiate the types of data collection with respective to time and terrain and Data base management and retrieving the data from different sources. • Improve knowledge on the Modeling surfaces and integration of Remote sensing with GIS. • Develops knowledge on GIS applications in different sectors.
	GEG – 303(A)	Agricultural Geography	2021	<ul style="list-style-type: none"> • Know evolution of Agriculture through at the different ages and approaches. • Understand the concepts and importance of determinants in different cropping patterns. • Differentiate the Determinants of Agriculture • Understand agricultural location theories also the problem and prospects of Indian Agriculture .
	GEG – 303(B)	Transport geography	2021	<ul style="list-style-type: none"> • Know evolution and development of Transport through at the different ages and approaches.

				<ul style="list-style-type: none"> • Understand the concepts and importance of determinants in different transport patterns. • Differentiate the Determinants of transport and trade. • Understand transport theories also the problem and prospects of Indian transport. .
	GEG – 303(C)	Disaster Management Studies	2021	<ul style="list-style-type: none"> • Develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness. • Improve awareness on human and natural disasters • Understand classification of disasters and its impacts and management of disasters
	GEG – 304	Geographical Information System (GIS)	2021	<ul style="list-style-type: none"> • Acquaint knowledge the about especially Geographic Information System (GIS) softwares. • . Develop the skill of geo-referencing and creation of different data files. • Improve the practical knowledge on attribute data and linkage. • Develop the skill on analysis methods of GIS.
	GEG – 305	GPS Survey and Report	2021	<ul style="list-style-type: none"> • Develop the skill of understanding GPS and Survey. • Generate awareness on post processing of GPS data and collection of data from GPS survey. • Develop skill of report writing by using GPS data and software and hardware.
	GEG – 306 (A)	Regional Geography of Andhra Pradesh	2021	<ul style="list-style-type: none"> • Develop the understanding about physical features of Andhra Pradesh.. • Familiarize the students with physiography, Drainage, Climate, soil and natural vegetation of Andhra Pradesh. • Visualise the population, mineral and transportation structures in Andhra Pradesh
	GEG – 306 (B)	Geographical Information System (GIS) & Global Positioning System (GPS) and Applications	2021	<ul style="list-style-type: none"> • Understand the evolution of GIS. • Focus on collection, analyzing, interpretation andresenting the data related to Earth. • Differentiate the types of data • Improve knowledge on the Modeling surfaces and integration of

				<p>Remote GPS with GIS.</p> <ul style="list-style-type: none"> • Develop knowledge on GIS and GPS applications in different sectors.
	GEG – 401	Regional Planning	2021	<ul style="list-style-type: none"> • Acquire a solid base of knowledge in the principles and practices Regional planning. • The skills necessary for the effective practice of planning, including its purpose, meaning elements of plans; adoption, administration, and implementation of plans. • Develop the values necessary for the effective practice of planning, including problem-solving skills; research skills; written, graphical, and oral skills; computational skills. <p>Learn the values and ethical standards affecting the practice of planning</p>
	GEG – 402	Advanced Remote Sensing	2021	<ul style="list-style-type: none"> • Demonstrate knowledge of the foundations and theories of Photogrammetry, aerial photography and remote sensing. • Acquire knowledge of physical geography and the methods and techniques for observing, measuring, recording and reporting on geographic phenomena. • Demonstrate their competence to work individually and as a team to develop and present a client-driven GIS solution. • Prepared to apply their skills in professional careers.
	GEG – 403(A)	Water and Soil Resources Management	2021	<ul style="list-style-type: none"> • Apprise the students to various water resources related aspects and hydrological cycle. • Focus on ground water and soil specifications. • Develop skill of water and soil management and to study on some case studies.
	GEG – 403(B)	Political Geography	2021	<ul style="list-style-type: none"> • Apprise the Students will be able to critically examine the geographical bases of political studies.

				<ul style="list-style-type: none"> ✓ Able to evaluate and correlate different theories with contemporary geopolitical and geo- strategic issues.
	GEG – 403(C)	Research in Geographical Studies	2021	<ul style="list-style-type: none"> • Explain the historical evolution, of research in Geographical studies.. • Understand about ethics, methods and factors in geographical research. • Improve the knowledge about forms of research and design. • Illustrate research methods and data collection. • Acquaint research analysis and report writing.
	GEG = 404	Remote Sensing Applications	2021	<ul style="list-style-type: none"> • Explain practical knowledge on Remote sensing applications... • Understand Visual and digital interpretation of satellite Images. • Illustrate interpretation of Aerial photos. • Acquaint knowledge on allocation of RS in different fields and sectors.
	GEG – 405	Project Work and Viva Voce	2021	<ul style="list-style-type: none"> • Develop geo spatial technologies applications in different geographical areas. • Understand Selection of the project, complete the project and report writing.
	GEG – 406 (A)	Regional Geography of India	2021	<ul style="list-style-type: none"> • Explain practical knowledge on Remote sensing applications... • Understand Visual and digital interpretation of satellite Images. • Illustrate interpretation of Aerial photos. <p>Acquaint knowledge on allocation of RS in different fields and sectors</p>
	GEG – 406 (B)	Principles of Remote Sensing	2021	<ul style="list-style-type: none"> • Develop knowledge on history and evolution of Remote sensing • Explains the principle involved in remote sensing i.e. the Electromagnetic spectrum, reflection, refraction, diffusion, absorption and interaction with earth’s atmosphere. • Understand knowledge on the platforms and sensors and instruments used for remote sensing • Illustrate about the specifications remote sensing different satellites.

36. Geology

S.	Course	Title of the	Years of	
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No	Code	Course	Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	GEO-101	Geomorphology and Paleontology	2021	<p>1) Able to explain conceptual approaches in geomorphology.</p> <p>2) Able to describe land forms and land forming processes in different climate zones and tectonic regimes.</p> <p>3) Able to explain different theories and models for landscape evolution.</p> <p>4) Obtain knowledge in recognizing and minimizing the mass wasting.</p> <p>5) Able to apply geomorphological concepts in economically important projects.</p> <p>6) <i>Palaeontology</i> is the study of prehistoric species, mostly ones that are extinct. It focuses primarily on fossil data, using a variety of physical, chemical and biological.</p> <p>7) Paleontology has essentially three basic goals: (1) to describe the world's past biodiversity; (2) to outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.</p>
2	GEO-102	Crystallography & Mineralogy	2021	<p>1) Students will be able to describe crystal structures, crystal symmetry and twinning</p> <p>2) Students will learn the use of X-ray crystallography to determine the arrangement of atoms in a crystal.</p> <p>3) Students will be able to identify the mineralogical composition of geological materials by studying some of the optical properties and techniques in order to reveal their origin and evolution.</p> <p>4) Students will get thorough knowledge about the physical chemical and optical characteristics of minerals could lead to the discovery of new uses for Earth's mineral resources.</p>
3	GEO-103P	Crystallography & Mineralogy	2021	<p>1. The student understands the importance of minerals to society and to the study of the Earth.</p> <p>2. Can explain how the properties of chemical elements and their bonds regulate the structure and composition of minerals.</p> <p>3. Demonstrate how the crystal structure of minerals affects the external</p>

				<p>morphology and physical properties of a mineral (e.g. crystal symmetry, crystal habit).</p> <p>4. Identify various minerals using Physical properties.</p> <p>5. Identify various crystal forms shown by minerals belonging to different crystal system.</p>
4	GEO-104P	Geomorphology & Paleontology	2021	<p>1) The practical application of geomorphological science now forms river restoration and environmental protection.</p> <p>2) the extensive experience gained through field work, analysis and input to the design process to provide thorough understanding of geomorphology in the river environment and describe</p> <p>3) Paleontology is highly relevant to the modern and future world. We can learn how climate change has effected past organisms as well as how organisms have changed the physical world. We can also better understand the principles of extinction, evolutionary change, and biodiversity.</p> <p>4) Paleontological resources, or fossils, are any evidence of past life preserved in geologic context. They are a tangible connection to life, landscapes, and climates of the past. They show us how life, landscapes, and climate have changed over time and how living things responded to those changes.</p> <p>5) Paleontology lies between biology and geology since it focuses on the record of past life, but its main source of evidence is fossils in rocks.</p> <p>6) paleontology, also spelled paleontology, scientific study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.</p> <p>7) Body fossils and trace fossils are the principal types of evidence about ancient life, and geochemical evidence has helped to decipher the evolution of life.</p>
5	GEO-105	Stratigraphy & Paleontology	2021	<p>1) Students would have acquired comprehensive knowledge on principles of Stratigraphy, correlation methods classification of Stratigraphy units, tectonic framework of India and Geological timescale.</p>

				<p>2) Ability to give an account of various stratigraphic units and give stratigraphic column distribution in India, fossil content and economic importance of given geological formation.</p> <p>3) Apply standard stratigraphic codes while preparing geological reports</p> <p>4) Describe morphology, classification, evolutionary trends of Invertebrate fossils with geological and geographic distribution and paleoecological and paleo-environmental relevance.</p> <p>5) Ability to identify, classify and describe the morphology of the invertebrate fossils and plant fossils.</p> <p>6) Application of fossils in establishing the age of the rockunit, correlation with other area, and Use of fossil in finding mineral deposits.</p> <p>7) Ability to apply micropalaeotological techniques in hydrocarbon exploration.</p>
6.	GEO-106	Human Values & Professional Ethics-I	2021	<p>1) After completion of this course the students will be able to know the importance of Ethics and Human Values in various professions.</p> <p>2) Students also will get in depth knowledge and understanding of moral values and ethical code of the Indian Society. Especially embedded in various scriptures.</p>
7.	GEO-201	Structural Geology and Geotectonics	2021	<p>1) Able to demonstrate a basic understanding of stress, strain, rheology of earth's lithosphere and comprehend how to describe and classify brittle and ductile structures.</p> <p>2) Able to describe, identify and analyze the folds, faults and joints and their effects on outcrop pattern.</p> <p>3) Measure, plot and interpret structural field data and can relate these to geological Maps and knows how to read geological maps and geological cross-section.</p> <p>4) Obtain knowledge of shear zone characteristics and textures which are usually highly, Mineralized zones.</p>
8.	GEO-202	Remote Sensing and GIS	2021	<p>1) Develop knowledge in basics of Remote Sensing interpretation keys and applications.</p> <p>2) Formulate the relationship between EMR and satellite Remote Sensing.</p> <p>3) Application for Remote Sensing for important economic deposits.</p> <p>4) Operate GIS data model and demonstrate GIS techniques for various applications.</p>

				5) Apply RS and GIS techniques to analyze the various geological materials.
9.	GEO-203P	Structural Geology & Sedimentology	2021	<p>1) The interpretation of geological maps and determination of strike and dip, Borehole problems and apparent dip, plunge and pitch of linear structures</p> <p>2) Structural geology concepts and tools to understand rocks deformation in hot environments</p> <p>3) Structural geology with interpretations and simple geomechanical problems and solutions</p> <p>4) Structural geology issues related to new instruments in measuring structural data from rocks, paleomagnetic studies in tectonics field studies in structural geology interdisciplinary aspects of structural geology.</p> <p>5) Sedimentology encompasses the study of modern sediments such as sand, silt, and clay, and the processes that result in their formation (erosion and weathering), transport, deposition and diagenesis.</p> <p>6) Sedimentology, the study of sedimentary rocks and the processes by which they are formed, includes and is related to a large number of phenomena.</p> <p>7) Sedimentology includes the five fundamental processes defined by the term sedimentation --weathering, erosion, transportation, deposition and diagenesis.</p>
10.	GEO-204P	Remote Sensing and GIS	2021	<p>1. Understand the concepts of Photogrametry and compute the heights of objects</p> <p>2. Understand the principles of aerial and satellite remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies.</p> <p>3. Understand the basic concept of GIS and its applications, know different types of data representation in GIS.</p> <p>4. Understand and Develop models for GIS spatial Analysis and will be able to know what the questions that GIS can answer are.</p> <p>5. Apply knowledge of GIS software and able to work with GIS software in various application fields.</p> <p>6. Illustrate spatial and non spatial data features in GIS and understand the map projections and coordinates systems.</p> <p>7. Apply knowledge of GIS and understand the integration of Remote Sensing and GIS.</p>
11	GEO-205	Sedimentology	2021	1) Able to identify different sedimentary rocks in both hand specimens and thin section and derive information on the depositional conditions and

				<p>environments.</p> <p>2) Able to study the sequence of sedimentary rock strata and describe the tectonic framework of sedimentation to understand the earth's history including palaeoclimatology and history of life</p>
12	GEO-206	Human Values & Professional Ethics-II	2021	<p>1) After completion of this course the students will be able to follow and practice good behaviour with human values and moral support to their elderly family members.</p> <p>2) They also aware and get knowledge about medical ethics how the doctors will behave with patients, what type of ethics should be followed by business people. They also get in through knowledge about the protection of environment social ethics like family ethics, the role of print and electronic media in prevention and protection of Human rights in Indian society.</p>
13	GEO-301	Igneous Petrology	2021	<p>1) Acquire knowledge on the evolution of magma by different processes takes place from origin to emplacement with respect to different tectonic settings.</p> <p>2) Explain Igneous processes, formation, structures, classification and significance of texture in explaining rock history.</p> <p>3) Obtain knowledge on the crystallizing phase equilibrium of multi component magma system.</p> <p>4) Identify different Igneous rocks both in handspecimens and thin sections in terms of their petrogenesis by studying the petrographic characteristics.</p>
14	GEO-302	Metamorphic Petrology	2021	<p>1) This course has links directly with industry and share the knowledge about a wide range of ore deposits.</p> <p>2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India.</p> <p>3) Comprehensive knowledge in reflection light optic and ore textures.</p>
15	GEO-303P	Petrology	2021	<p>1) Describe the types and relative abundances of phases in a rock based on observations from hand specimens and thin sections</p> <p>2) Interpret the geologic history of igneous rocks based on mineral assemblage and textures using both hand sample and microscope techniques</p> <p>3) Use metamorphic mineral assemblages and textures to constrain deformation history and P-T conditions</p>

				<p>4) Use geochemical data (partition coefficients, REE plots, etc) to constrain petrogenetic processes</p> <p>5) Integrate their research findings with those of peers in developing a consensus model that (a) explains mineral occurrences and interplay (micro- and macroscopic) in field samples, and (b) holds up to public scrutiny (as a consensus model and as individual components) at a departmental mini-poster symposium</p> <p>6) Design and implement a field sampling campaign</p> <p>7) Use a portable X-Ray Fluorescence Spectrometer to collect elemental analyses</p> <p>8) Use MS Excel to organize, plot, and evaluate the petrogenesis of CRB using elemental data</p>
16	GEO-304P	Geochemistry	2021	<p>1) Geochemistry can play a key role in helping to protect the safety of drinking water by identifying the sources, concentration and forms of potentially harmful elements such as arsenic mercury and fluoride in natural water.</p> <p>2) Geochemistry and health establishes and explains links between the natural or disturbed chemical composition of the earth's surface and the health of plants animals and people.</p>
17	GEO-305	Geochemistry and Thermodynamics	2021	<ol style="list-style-type: none"> 1. 1) Understand the behavior of elements in a geochemical context and relate this knowledge to how elements redistribute within the Earth. 2. 2) Learn to interpret and explain interactions between Earth reservoirs. 3. 3) Understand and interpret the major processes that form and modify the Earth's crust and mantle. 4. 4) Use isotopes to trace geological processes and age date specific events.
18	GEO-306	Computer Applications and Geostatistics	2021	<ol style="list-style-type: none"> 1) Comprehend the database related to field geological data 2) Prepare and Interpret graphical and pictorial data 3) Exposure to some selected software's related to geology
19	GEO-307	Dimensional Stones and Building Materials	2021	<ol style="list-style-type: none"> 1) Explain the distribution of dimensional stones and occurrence of construction materials 2) Classify dimensional stones and construction materials

				3) Assess the suitability of various dimensional stones and construction materials
20	GEO-308	Gemology	2021	<p>1) The course is focused on a comprehensive learning in gemology</p> <p>2) Understands the formation, classification and properties to final the grading and evaluation.</p> <p>3) Knowledge in order to identify original gemstones and stimulants</p> <p>4) Acquire skills which will be useful to them in gem industry</p>
21	GEO-309	Surveying and Field Geology	2021	<p>1) Understand the use of different surveying instruments, field equipment, aerial photographs and their use.</p> <p>2) Compute the area and earthwork for different works by using surveying instruments</p> <p>3) Analyze surveying techniques, tools, survey data and geological reports</p> <p>4) Prepare contour maps, geological maps and reports</p> <p>5) Solve survey issues using proper survey and interpretation.</p> <p>6)Use appropriate modern tools in surveying and mapping</p>
22	GEO-401	Economic Geology	2021	<p>1) Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in economic geology often assist in the extraction of the mineral commodities as well.</p> <p>2) <i>Economic geology</i> is concerned with earth materials that can be used for economic and/or industrial purposes. These materials include precious and base...</p> <p>3) Scientific discipline concerned with the distribution of mineral deposits, the economic considerations involved in their recovery, and an assessment of the reserves available.</p> <p>4) Economic geology deals with metal ores, fossil fuels (<i>e.g.</i>, petroleum, natural gas, and coal), and other materials of commercial value, such as salt, gypsum, and building stone. It applies the principles and methods of various other fields of the geologic sciences, most notably geophysics, structural geology, and Stratigraphy . Its chief objective is to guide the exploration for mineral resources and help determine which deposits are economically worthwhile to mine. Specialists in</p>

				economic geology often assist in the extraction of the mineral commodities as well.
23	GEO-402	Mineral Exploration, Mining Engineering & Geology	2021 7	<ol style="list-style-type: none"> 1) This course linked to industry and acquires knowledge on techniques to locate ore bodies, methods for mineral exploration and geologic aspects of drilling. 2) Acquire knowledge on geophysical methods for Ore reserve estimation. 3) Acquire knowledge on Ore beneficiation processes and techniques. 4) Confirm mining rules and regulations 5) Able to determine the suitable mining methods 6) Analyse different ores and ore beneficiation processes. 7) Understand the different engineering properties of rock types and role of geologists in selecting the sites for different major engineering projects.
24	GEO-403P	Economic Geology	2021	<ol style="list-style-type: none"> 1) This course has links directly with industry and share the knowledge about a wide range of ore deposits. 2) Offers a detailed study of origin of economic mineral deposits its identification properties and distribution in India. 3) Comprehensive knowledge in reflection light optic and ore textures. 4) Acquire practical knowledge on microchemical techniques for identification ores and estimation of ore reserves.
25	GEO-404P	Project Work	2021	<ol style="list-style-type: none"> 1) The project area covered by closepet granite, hornblende-biotite-gneisses is the predominant geological formations in this watershed area. 2) The rainfall of the area is not consistent, but found varying between 541 mm to 951 mm for Madire vanka watershed for 21 years. 3) For horticulture plantation like sweet orange and unirrigated crops, Contour cultivation contour bunding and Gully plugging etc, are suggested to facilitate the arrest of soil erosion and improve soil moisture regime. 4) Finally in water resource development plan one check dam and one percolation tank are recommended to regulate the surface water flow thereby increasing its influence over the command area and the ground water levels.
26	GEO-405	Hydrogeology	2021	<ol style="list-style-type: none"> 1) Apply the knowledge of geological formations and the hydrological properties of rocks

				<p>2) Analyze the suitability of water for domestic, irrigation and industrial purposes Conduct geological and geophysical investigations and give recommendations for drilling of borewells.</p> <p>3) Explain causes of pollution of groundwater give remedial measures to the society.</p> <p>4) Use modern methods and appropriate techniques to carrying out geophysical studies and artificial recharge methods</p> <p>5) Students will get critical knowledge on evaluation of geological condition at the major engineering project sites.</p>
27	GEO-406	Environmental Geology & Natural Hazards	2021	<p>1) Explain different aspects of environment and local, regional and global environmental problems.</p> <p>2) Classify and explain the environmental pollution and disaster control technologies</p> <p>3) Prepare, interpret and implement environment projects</p> <p>4) Identify the natural and environmental disasters, its causes and apply preventive measures.</p> <p>5) Adopt the laws and regulations towards hazard management</p> <p>6) Able to prepare controls of mitigating toward natural disasters.</p>
28	GEO-407	Water Shed Management	2021	<p>1) Explain the importance of watershed management</p> <p>2) Classify and explain the different water harvesting techniques</p> <p>3) Use modern tools for land erosion control</p> <p>4) Develop or improve the people's participatory approach for sustainable development and management of watersheds.</p>
29	GEO-408	Medical Geology	2021	<p>1) Explain about relationship of human Health and Geological Processes.</p> <p>2) Able to understand the importance of the Water quality standards and impact of micronutrient deficiencies in soils and crops on human health</p> <p>3) Analyse the interaction of abundance of elements and geological effects.</p>
30	GEO-409	Fuel Geology	2021	<p>1) The course offers a detailed study about natural fuels like coal and petroleum their formation and distribution especially in sedimentary basins.</p> <p>2) Students shall benefit to have basic ideas about formations, nomenclature in constitution of coal working detail of distribution of coals and coal industry in India, Sufficient idea of formation and entrapment of oil and gas.</p> <p>3) Get elaborate knowledge about occurrence of atomic minerals in nature,</p>

				methods of prospecting, atomic fuels and environment.
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37. Home Science

Food Science Nutrition & Dietetics

S. No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	FSND 101	Food Chemistry and Analysis	2021	<p>Knowledge on chemical composition physical, chemical, and functional properties of Water, carbohydrate, Protein and Fats.</p> <p>Understand the principles and working applications of different analytical techniques associated with food.</p> <p>skills in qualitative and quantitative estimation of nutrients in different foods.</p> <p>This course gives on hands on experience which will help student to become food analyst at local, regional, national and global levels.</p>
2	FSND 102	Clinical Nutrition and Dietetics-I	2021	<p>The concepts of nutrition and its relation to health and describe the role and responsibilities of Dietitian in Hospital will be dealt.</p> <p>Knowledge related to Therapeutic modification of diets and Plan and prepare diet for different diseases conditions.</p> <p>This will help the students to get employability in hospitals and also start their own diet and nutrition clinics at local, regional and national level.</p>
3	FSND 103 -A	Food Science and Experimental Foods	2021	<p>This course will give knowledge on Plant and Animal foods composition, and processing techniques on nutritive quality of foods.</p> <p>Understand the principles of cookery of different foods and methods of evaluation.</p> <p>This course is prerequisite for skill development in Food Product development.</p> <p>Standardization and experimentation on different foods leading to physical,</p>

				chemical and sensory changes can be understood leading to become food research analyst in industries at local, regional, national levels.
4	FSND 103- B	Baking Technology	2021	The process of baking and role of different ingredients for different baked products in this course will help the students to develop skills as entrepreneurs. The concepts and knowledge on process of baked products supply chain helps students for employability in baking industries at local and regional levels.
5	FSND 104 -A	Community Nutrition	2021	Nutrients in food, their functions and consequences of deficiency is included in this course. Developing skills for planning diets for nutritional disorders like PEM, Iron, Vitamin A and Iodine and the knowledge of techniques to assess the nutritional status of different age groups. Acquire knowledge on government programs to prevent nutritional disorders according to regional and national needs.
6	FSND 104 -B	Nutrition during Life span	2021	Knowledge on the importance of nutrition during life span is imparted in this course and enlightened the principles and working applications during dietary modifications and menu planning. Comprehensive knowledge on analyzing the nutritional requirements and evaluating diets for comparison with RDA and formulate dietary interventions to address nutritional deficiencies.
7	FSND 105	Practical I 101+103-A/103-B	2021	Developing skills in quantitative and qualitative analysis of foods and standardization of foods using different processing techniques is included along with skills in processing, preparation and evaluation of bakery products. This helps in employability and entrepreneurial opportunities for the students at food industries at local, regional, national and global levels
8	FSND 106	Practical II 102+104-A/104-B	2021	This course gives hands on experience in Therapeutic modifications of diet for different diseases by planning, preparing and evaluating. Community assessment skills in terms of anthropometry, dietary, clinical and biochemical for various disorders and planning programs for important days is given along with Applications of Computational skills in the Nutritional allowances during life span.
9	FSND 107	Human Values and Professional Ethics-I	2021	The students understand the importance of good character, conduct and values embedded in various religions . Demonstrate knowledge of ethical values in non-

				class room activities,internships and field work.
10	FSND 201	Nutritional chemistry Bio	2021	This course deals with the metabolism of nutrients such as carbohydrates, proteins, lipids, minerals and vitamins in human physiology acquire knowledge on factors affecting digestion, absorption of nutrients. Create awareness on enzymes and its role in nutrient metabolism gain knowledge on role of vitamins and minerals as coenzymes in metabolism.
11	FSND 202	Clinical Nutrition and Dietetics-II	2021	The concepts of dietary principles for various diseases and comprehend knowledge in Dietary modifications for the management of diseases is included in the course. Application of principals in preparation and service of diets to the patients and assess the case studies and construct the diet charts will be explained. This course will be helpful in creating employability and entrepreneurship at regional and national level.
12	FSND 203- A	Food Microbiology and Safety	2021	Knowledge acquirement about important genera of microorganisms associated with food. This course makes the student to acquaint with the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms and food contaminants and their sources. Gain knowledge on the characteristics of food borne diseases, infections and intoxications and their identification thereby creating an opportunity as food microbiologist in food industries at local and regional level.
13	FSND 203 B	Nutrition in Emergencies And Disaster Management	2021	This course helps to assess the emergency situations related to food and Nutrition in natural and manmade disasters and nutrition surveillance and treatment in emergencies. Knowledge on planning nutrition relief and rehabilitation in emergencies and develop skills in Nutritional epidemiological studies.
14	FSND 204 A	Research Methodology	2021	The concept of doing research and terms like ‘variables’, ‘hypotheses, and ‘research ‘and different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research are dealt in this course. This course helps student to critically gain knowledge to select a sample by using different sampling methods like probability and non-probability sampling. Develop a research proposal in the appropriate scientific style to help students for

				skill development for higher learning.
15	FSND 204 B	Statistics and Computer Applications	2021	<p>This course makes the student to understand about the scope of statistics in research, concepts of inferential statistics like t-test, chi-square, Correlation and Variance.</p> <p>Basics in computer and its application in statistics and development of skill in computing statistics by using statistical software will be imparted.</p>
16	FSND 205	Practical I 201+203-A/203-B	2021	<p>Developing skill and hands on experience in analysis of biochemical parameters in blood and serum will be carried out in this course along with standard methods and procedures for the microbiological analysis of food. Skill development in planning and Execution of nutrition epidemiological and rehabilitation studies in emergencies will be imparted</p>
17	FSND 206	Practical II 202+204-A/204-B	2021	<p>Explain concepts on Epidemiology and its application in planning programs during emergencies.</p> <p>Critically apply knowledge of application of statistics in data analysis using computer applications for data analysis will be done.</p>
18	FSND 207	Human Values and Professional Ethics-II	2021	<p>Understand the importance of value education and ethics in medical, business, environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.</p>
19	FSND 301	Food Processing and Preservation Technology	2021	<p>The course illustrates the principles and scope of food processing and preservation along with various techniques/methods.</p> <p>Knowledge acquirement on advanced emerging technologies and their applications in food processing and preservation is imparted to the students.</p>
20	FSND 302	Advances in Human Nutrition	2021	<p>The course appraises the advance concepts of nutrition of Brain, Immunity and Sports along with the concepts of dietary management in endemic nutrition problems.</p> <p>This course create knowledge on the dietary management during emergencies and the process and relation of immunity and nutrition.</p> <p>This course also creates platform for further research in Sports nutrition.</p>
21	FSND 303-A	Nutrition Assessment Techniques	2021	<p>Understanding the methods of nutritional status assessment like Anthropometry, Biochemical, Clinical and Dietary will be dealt in this course.</p> <p>Application of knowledge on assessment techniques of protein quality in diets and Plan nutrition research using animal models is given in this course along with</p>

				designing in nutrition research using Human models.
22	FSND 303-B	Public Health Nutrition	2021	Acquiring insight into the public health problems and their implications and developing skills in organizing and evaluating nutrition projects in the community is acquainted with this course. Appreciating the national and international contribution towards nutrition improvement in India and applying different assessment techniques for nutritional screening is given in this course.
23	FSND 304	301+302	2021	This course will equip the students with skills required for process and preserve various food products along with planning and preparation of foods in special needs like space, high altitudes and low temperatures.
24	FSND 305	Institutional Food Service Management(T)+ Practicals (P)	2021	The course will gain knowledge on the different types and management of food services and exposure to the dietary department in a hospital setting. Knowledge on finance, personnel management, duties and responsibilities of dietitians will be learnt. Gaining skills to act in a variety of capacities in clinical, administrative, and community settings and quantitative food production and planning diet plans for different diseases by placing in hospitals is practiced leading to employability at local, regional and national levels. Internship as dietitian in government and corporate hospitals give practitioner skills and hands on experience for entry-level dietitians who are able to assume leadership roles to improve and maintain the nutritional care of diverse individuals, families and communities within national and global populations.
25	FSND 306-A	Fundamentals of Food, Nutrition and Health	2021	The course will help students to gain knowledge on foods, food groups, balanced diet for different age groups and understand the importance of macro and micronutrients in daily diet. Comprehending knowledge on deficiency symptoms of different nutrients and developing skills and hands on experience to assess nutritional problems in community is included in the course.
26	FSND 306-B	Dynamics in Food Preparation	2021	The course makes the student to learn the principles of safe food preparation and food pyramid and understand the role of foods in cookery. Applying the knowledge about effect of cooking on nutrients and estimate the effects of cooking on Nutrients will be given as hands on experience.
27	FSND 401	Food Safety Standards and Quality Control	2021	This course includes the current food safety standards rules and regulations and gain knowledge on desirable and undesirable constituents and contaminants in

				<p>foods.</p> <p>This course helps students to critical analysis on subjective and objective methods of quality of food and develop skills for quality analysis and assurance of food at national organizations like FSSAI.</p>
28	FSND 402	Food Product Development and Marketing	2021	<p>This course illustrates the new product categories in food market and their characteristics and elucidate the process of new food product development in food industry.</p> <p>Exemplifying various specialty food products and their applications and acquiring the skill to design and development of new food product and analyzing the quality of the product is imparted.</p>
29	FSND 403-A	Nutrition for Health and Fitness	2021	<p>The course defines the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation.</p> <p>Energy metabolism pathways during physical activity and describing the role of macronutrients in physical performance, weight management and obesity has been included.</p> <p>This course also explains the nutritional needs in different sports and the role of national agencies, thereby creating employability in Nutrition fitness centers at local, regional and national levels.</p>
30	FSND 403-B	Geriatric Nutrition	2021	<p>Understanding the physiological changes and theories of ageing and gaining knowledge on importance and consequences of diet in elderly is included in this course.</p> <p>Creating awareness on degenerative diseases, life style genesis and its management through diet and acquainting with the government programs and policies for elderly is included.</p>
31	FSND 404	401+402	2021	<p>This course helps students to critical analysis on subjective and objective methods of quality of food and develop skills for quality analysis and assurance of food.</p> <p>skill to design and development of new food product and analyzing the quality of the product is imparted.</p>
32	FSND 405	Technology of Packaging(T+P)	2021	<p>This course provide knowledge on packaging and packaging materials an overview of the scientific and technical aspects of food packaging.</p> <p>Enabling the students to understand the regulations of packaging and packaging material testing and applying skills of new innovations in food packaging to improve product stability and/or to extend the product shelf-life was included.</p>

33	FSND 406-A	Child Growth and Development	2021	The course helps the students to know the terms growth, development and stages of development across life span and understand the characteristics of children at different stages of childhood Explaining the different developments like physical, cognitive, language and social development during childhood and applying knowledge to understand normal development and developmental delays during childhood is studied.
34	FSND 406-B	Disaster Management	2021	The course helps to know about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management and to understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters. Explaining the efforts made by the NGOs, Community based organizations and local administration in disaster management will be dealt in the course.

Human Development and Child Welfare

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	HDCW-101	Advanced Study of Child Development	2021	Students acquire the knowledge of holistic development of individuals from conception to adolescent period. The students can disseminate the knowledge to teachers and parents regarding normal and delayed development among children. The students can apply skills when they serve as teachers at local level or as extension officers in national schemes like ICDS.
2.	HDCW-102	Curriculum for Early Years	2021	Students apply knowledge about appropriate approaches to teach pre- school children. They apply skills in the field of early childhood education, when they are placed as pre-school teachers at local level and as pre- school trainers at national level in Government organizations like ICDS or NGOs like Azim Premji foundation, PRATHAM, Bachpan etc.
3.	HDCW-103(A)	Family Dynamics	2021	Students will get knowledge related to issues in family and society and understand laws related to marriage and family. Students utilize this knowledge when they work in national organizations like social welfare board ,and family counseling centers and in

				non-government organizations catering to the family welfare at local level like PASS , RASS etc.
4.	HDCW-103-B	Gender Issues in Human Development and Family Relations	2021	Students will be able to recognize the gender difference and gender issues in human development. This knowledge will help them to manage people with etiquette manner in personal and professional life.
5.	HDCW-104-A	Community Nutrition	2021	Students acquire knowledge about food groups, RDA and steps in planning a diet. The skills learnt in planning and calculation of nutritive values help when they work in local hospitals or in National programs like Zero budget natural farming , ICDS etc.
6.	HDCW-107	Human Values and Professional Ethics-I	2017	Students understand the importance of good character , conduct and values embedded in various religions . Demonstrate knowledge of ethical values in non-class room activities, internships and field work.
7.	HDCW-201	Quality Standards in ECE Centers	2021	Students will get knowledge about planning activities for pre-school children .They understand different ways of teaching stories ,rhymes etc using different audio-visual aids.apply skills in planning a day's activities for pre -school children , prepare Teaching Learning Material (TLM) and participate as student teacher in SVU Laboratory nursery school. The practical experience helps in establishing preschools, as entrepreneurs also to serve in Non Government institutions like Azim Premji Foundation, PRATHAM at national level and in Government sectors as extension officer at National level programs that are providing pre- school education
8.	HDCW -202	Theories of Human Development and Behavior	2021	Students describe different theories related to child development and understand the reasons for maladaptive behavior. Apply the knowledge of theories to understand the behavior of individuals and also in counselling , when they join as counselors at local schools and mental health institutions at regional level like VIMHANS ,Vijayawada , at national level like NIMH ,Hyderabad and at local level Child Guidance clinics run by Government hospitals like SVRR hospital.
9.	HDCW-203-A	Parent and Community Education	2021	Students gain knowledge about different child rearing practices and parenting styles adopted by parents. Gain skills in planning education materials for parents ,conduct parent education programs in schools and community, when they work as a teachers at local schools. It helps to disseminate the knowledge related to impact of parenting styles on child behavior to parents , teachers and significant others in the community.

10.	HDCW-203-B	Infant Development and Stimulation	2021	Students gain knowledge of stimulation activities for physical ,language ,cognitive and social development of infants. The knowledge and skills will help to plan stimulation activities for infants ,when they establish crèche as entrepreneurs or serve in Day care centers.
11.	HDCW-204-A	Research Methodology	2021	Student gain knowledge about types of research ,different methods of sampling and preparation of schedules/questionnaires. The students get skills in preparation of a research proposal. The knowledge helps the students to write articles for journals at national and international levels.
18.	HDCW -207	Human Values of Professional Ethics -II	2017	Understand the importance of value education and ethics in medical ,business ,environmental and social fields. The students apply the knowledge while joining in any profession and will contribute to society as socially responsible citizens.
19.	HDCW -301	Child Study Techniques	2021	Students are capable to use standardized techniques for assessment of IQ and personality of children. The knowledge and skills will be helpful when they work as school counselors in local schools and colleges and as counsellors in mental health institutions like VIMHANS ,Vijayawada and Child Guidance Clinics at local Government hospitals like SVRR hospital.
20.	HDCW-302	Children with Developmental Challenges	2021	Students gain knowledge about the causes for various impairments and principles of assessment of children with disabilities and gifted children. The practical skills of management of special children were to be treated when they are placed as special educators in local schools ,colleges and at national Government organizations like NIMH,NIHH at national level and non government organizations at local level like Nava Jeevan center for Visually Challenged, RASS,PASS etc.
21.	HDCW-303 (A)	Organization and Management of Child Welfare Institutions	2017	Students gain knowledge about the organizations striving for child welfare at national and international level. The knowledge helps when students join as supervisors in national schemes like ICDS and at regional level organization like RASS and PASS etc.
22.	HDCW-303(B)	Child and Human Rights	2017	Students gain knowledge about human rights ,child rights and women rights. They can explain issues faced by women and children in difficult circumstances . The

				knowledge helps to understand the rights and problems of women and children when they work in Government organizations like Child Protection Officers.
24.	HDCW – 305	Life Skills Education (Theory) + (Practicals)	2021	Students will infer the importance of different life skills to maintain inter – personal and intra – personal communication: They will understand their strengths and weakness and importance of emotional intelligences to cope up with stress and emotions. The skills learnt will help them in their personal and professional and life at local, national and global levels.
27.	HDCW -401	Guidance and Counselling in Human Development	2021	Students gain the knowledge of different approaches to counselling. This will apply counselling skills to practice counselling process. The knowledge helps the students towards employment as counsellors in mental health institutions like VIMHANS ,Vijayawada and local non government organizations like RASS ,PASS ,VIMHANS ,Vijayawada etc.
28.	HDCW -402	Advanced Human Development-II	2021	Students understand the characteristics and problems of early, middle and late adulthood persons. This knowledge helps when they get employment in Day care (or) foster care centers for elderly citizens (or) employment in Govt and ,local old age homes run by non govt organizations like RASS and PASS etc.
29.	HDCW -403(A)	Rehabilitation and Management of Children with Special Needs	2017	Students understand the importance of Rehabilitation of children with developmental challenges through multi disciplinary approach. Gets practical knowledge about functioning of Govt and voluntary organizations that are managing children with developmental challenges .This helps students when they join as special educators at govt organizations like NIMH, Hyderabad and non govt organizations like RASS,PASS.
30.	HDCW -403-B	Gerontology	2021	Students understand the characteristics of old age theories relating to aging and causative factors for problems during old age. This knowledge helps when they establish care centers for elderly as entrepreneurs or work in organization catering to the welfare of elderly like “Karunadamam” run by TTD and Nava Jeevan old age home at local level.
31.	HDCW-404(Practical)			

32.	HDCW-405	Human Recourse Management ((Theory) + (Practicals)	2021	Students understand the importance of human resources management and HR management to the organization and employee's .They apply skills in administering test in selection and recruiting process. The knowledge and skills help in getting employment at both government and non – government sectors.
33.	HDCW 406(A)	Growth and Development During Early Years	2021	Students acquire the knowledge of holistic development of individuals from conception to adolescent period.The students can disseminate the knowledgeto teachersand parents regarding normal and delayed development among children. The students can apply skills when they serve as teachers at local level or as extension officers in national schemes like ICDS.
34.	HDCW-406(B)	Disaster Management	2017	Students gain in-depth knowledge about natural disasters; manmade disasters; chemical hazards : disaster management. This helps to understand efforts made by the NGOs, Community based organizations and local administration in disaster management and also to help Government in times of disasters

Extension Management and Communication Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	EMCT-101	Communication and Media Preparation (CMP)	2021	The concept of Communication –Recent trends in Instructional technology: Extension literature and the role of different factors influencing and effecting communication process- Dyad setting small group and mass communication. This course will help the students to improve their communication skills.
2	EMCT-102	Extension Education in Community Development (EECD)	2021	The students can gain understanding on the Extension Management community development and panchayat raj system to study the community by using PRA and various approaches of extension education. The students will get jobs as extension officers, and various placements in community development projects, as well as rural co-operative sector.

3	EMCT-103-A	Dynamics of Rural Society(DR)	2021	The students will gain knowledge on social structure; characteristics of rural people; rural social problems - social institutions, learn the factors affecting social change and gain insight about the welfare policies and programmes for rural society.
4	EMCT-103-B	Dynamics of Group Behavior (DGB)	2021	Know about the meaning characteristics, types and functions of groups. Understand the group dynamics and group behavior. Learn the factors affecting group management. Gain insight about the team building, stress and conflict management
5	EMCT-104-A	Community Nutrition(CN)	2021	The students know about nutrients in food and know about the nutritional deficiencies and the community level problems and policies and programmes of Nutrition.
6.	EMCT-104-B	Nutrition during Life Span(NLS)	2021	Gain knowledge on the importance of nutrition during life span. Enlighten the principles and working applications during dietary modifications. Comprehensive knowledge on analysing the nutritional requirements. Apply Computational skills in the Nutritional allowances during life span
7.	EMCT-105	Communication and Media Preparation &Dynamics of Rural Society / Communication and Media Preparation &Dynamics of Group Behavior	2021	Evaluate the Planning, Preparation and use of different teaching aids in teaching different groups of people and in different learning situations. To evaluate the Planning, Preparation and use of different teaching aids in teaching different groups of people and in different learning situations. Gain insight about the welfare policies and programmes for rural society. Gain insight about the team building, stress and conflict management
8.	EMCT -106	Extension Education in Community Development	2021	Acquire skill to study the community by using PRA techniques.Comprehend knowledge on the role of nutrients in different stages of human life and methods of nutritional assessment. Learn the community level problems and policies.

		&Community Nutrition / Extension Education in Community Development & Nutrition during Life Span		Comprehensive knowledge on analysing the nutritional requirements. Apply Computational skills in the Nutritional allowances during life span
9.	EMCT-107	Human Values and Professional Ethics -I (HVPE) *(Audit Course)	2021	Students will apply knowledge of professional ethics and correlate the concepts in addressing the ethical issues outside the class room.
10.	EMCT-201	Community Organization and Leadership (COL)	2021	Students will know about community organization, process of Community organization, rural institutions, leadership, analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth clubs; Role of Panchayat in developing rural women
11	EMCT-202	Entrepreneurial Development and Empowerment of Women (ED)	2021	Students will realize the role of entrepreneurship in economic development. Develop the skill of writing the business proposal and starting of business enterprise
12	EMCT-203-A	Educational Technology(ET)	2021	The students gain knowledge on concept of teaching learning process; forms and levels of teaching and learning; curriculum design, development knowledge on genesis and trends in modern education. This will help the students to develop the curriculum and to choose their career in the teaching field.
13	EMCT-203-B	Technology Transfer and Management (TTM)	2021	Know about Technology meaning and concept, systems of transfer of appropriate technology. Understand the appropriateness of communication media in the system of technology transfer. Analyze the constraints in transfer of technology. Gain insight about the agencies and departments involved in the transfer of technology
14	EMCT-204-A	Research Methodology (RM)	2021	Students get knowledge on ‘variables’, ‘hypothesis’, research ‘and recognize the purpose of doing a research, sampling methods and develop a research proposal in the appropriate scientific style.

15	EMCT-204-B	Statistics and Computer Application (SCA)	2021	Get awareness about the scope of statistics in research. Understand the concepts of inferential statistics like t-test, chi-square, Correlation and Variance. Critically apply knowledge of application of statistics in data analysis. Apply skills in using computer applications for data analysis
16	EMCT-205	Community Organization and Leadership & Educational Technology/ Community Organization and Leadership & Technology Transfer and Management	2021	Analyze different patterns of leadership; techniques of identification of leaders; steps to organize youth clubs; Role of Panchayat in developing rural women. Design the criteria for identifying leaders and appraise the ongoing programmes in the locality. Design a course curriculum; Preparation of lesson plans of selected topics. Analyze the constraints in transfer of technology.
17	EMCT-206	Entrepreneurial Development and Empowerment of Women & Research Methodology/ Entrepreneurial Development and Empowerment of Women & Statistics and Computer Application	2021	Realize the role of entrepreneurship in economic development. Analyze the institutional support of entrepreneurship. Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling. Develop a research proposal in the appropriate scientific style. Critically apply knowledge of application of statistics in data analysis. Apply skills in using computer applications for data analysis
18	EMCT-207	Human Values and Professional Ethics –II (HVPE)	2021	Students gain knowledge on ‘value education’ ‘self-introspection’ and ‘self-esteem develop well balanced personality, socially responsible persons of the society.
19	EMCT -301	Managerial Skills for	2021	Students will know about the conceptualization of management process and its

		Extension Professionals (MSEP)		major functions, managerial skill; nature and importance for extension professionals. To understand the concept; scope and relevance of media in society; functions and future prospects of media systems
20	EMCT -302	Training and Development (T&D)	2021	Students will learn the concept of training, goals of training; learning and types of learning, factors affecting learning among adult, current trends in training methodologies; training strategies and designs and acquire skills in developing; selection and use of different training methods- case study; role play; and brain storming; etc. This course will help the students to get jobs as Trainee- motivators, Trainers, consultants etc.
21	EMCT 303-A	Rural Development and Administration (RDA)	2021	Students gain insight about administration in Extension and rural development: coordination and supervision in rural development administration, the purpose and principles of administration; human relation in extension administration the recent ongoing rural development programmes etc. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
22	EMCT 303-B	Principles of Guidance and Counseling (PGC)	2021	Develop knowledge about the concept; purpose; functions and role of guidance; types of services in a guidance programme , counseling and counseling theories, group guidance and counseling; concept; characteristics; Individual v/s group techniques. This course will help the students to get jobs as counselors and in Government and Non-government organizations, as counselors, consultant research co-coordinators etc
23	EMCT -304	Managerial Skills for Extension Professionals & Training and Development	2021	Learn creative problem solving techniques; stress management practices; and time management practices. Develop skills regarding organizational management. Acquire skills in case study; role play; and brain storming; etc. Analyze the roles of a trainer; competencies of trainers; and trainer- trainee perceptions.
24	EMCT – 305	NGO Management (NGOM) (Theory) +	2021	Know about specific knowledge on project and NGO management. Understand the

		(Practicals)		basic concepts and principles involved in managing NGOs. Enhance skills and techniques of Project evaluation / Resource mobilization. Gain insight on project proposal writing and maintenance of records.
25	EMCT-306 –A	Fundamentals of Food, Nutrition and Health (FFNH)	2021	Gain knowledge on foods, food groups, balanced diet for different age groups. Understand the importance of macro and micronutrients in daily diet. Comprehend knowledge on deficiency symptoms of different nutrients. Apply skills to assess nutritional problems in community.
26	EMCT -306-B	Dynamics in Food Preparation (DFP)	2021	Learn the principles of safe food preparation and food pyramid. Understand the role of foods in cookery. Apply knowledge about effect of cooking on nutrients. Able to differentiate different cooking equipments and role of food items in cookery
27	EMCT-401	Communication Technologies in Extension (CTE)	2021	To understand the concept; scope and Communication technologies, relevance of media in society; functions and future prospects of media systems etc.
28	EMCT -402	Participatory Programme Management (PPM)	2021	Students will get knowledge about Programme planning in Extension; Programme Implementation; Programme Evaluation, Documentation, Programme Planning; the Preparation of plan of work ; Purpose, types and tools of Evaluation; Programme planning and implementation, documentation in Programme implementation. This course will help the students to get jobs as rural development officers, and get jobs in National NGOs like PRADHAN, CARE, SEWA etc
29	EMCT -403-A	Extension Management (EM)	2021	Students will know about administration and management; process of management and organizational climate, understand the qualities and functions of extension personnel; Problems and issues of extension management in India. Analyze the management skills of extension personnel.
30	EMCT -403-B	Science & Technology for Rural Women (STW)	2021	Students will learn about the Science and Technology for rural development; Energy saving devices-application of solar energy; bio-gas etc., application of Science and Technology in Home science, safe water supply methods suitable for rural areas; health- hygiene and environmental sanitation. , agencies involved in research and application of Science and Technology.
31	EMCT-404	Communication	2021	Analyze the definite role of advertising in modern marketing system. Evaluate media

		Technologies in Extension & Participatory Programme Management		systems in inter-relation of advertising and mass media systems and types of advertisements. To appraise Programme Evaluation; documentation in Programme implementation. To design and administer a schedule for collection of data : Analysis of data; Develop a Plan of work
32	EMCT-405	Local Government in AP (LGAP) ((Theory) + (Practicals)	2021	Know about local government in Andhra Pradesh. Understand the urban and rural local government, composition, powers and functions. Evaluate committee systems in urban and rural local governments. Assess people's participation in developmental programmes.
33	EMCT 406-A	Growth and Development During Early Years (GDEA)	2021	Know the terms growth , development and stages of development across life span. Understand the characteristics of children at different stages of childhood Explain the different developments like physical, cognitive , language and social development during childhood. Apply knowledge to understand normal development and developmental delays during childhood.
34	EMCT 406-B	Disaster Management (DM)	2021	Students will get an insight about natural disasters: manmade disasters; chemical hazards; National and International strategies to mitigate disaster management., global warming etc) efforts made by the NGOs, & Community based organizations and local administration in disaster management.

Food Technology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	FT 101	Food Chemistry and Analysis	2017	<ul style="list-style-type: none"> - Students will acquire knowledge about physical, chemical, and functional properties of foods. - Learn the fundamental principles and working applications of different analytical techniques associated with food.

				<ul style="list-style-type: none"> - Students will be able to explore and perform skills in qualitative and quantitative estimation of nutrients in different foods.
2	FT 102	Cereals, Legumes and Oil seed Technology	2017	<ul style="list-style-type: none"> - Students will gain knowledge on the structure and composition of cereal grains, pulses and oil seeds. - Understanding of the basic concepts of Post harvest technology, mechanism of equipments and processing of cereals, pulses and oilseeds - Know about various processing, milling process and evaluate Traditional and commercially processed foods with cereals, pulses and oilseeds
3	FT 103-A	Food Science and Experimental Foods	2017	<ul style="list-style-type: none"> - Students will acquire knowledge on structure, composition and functional properties of plant and Animal foods. - Understand the principles of cookery of different foods and methods of evaluation. - Students will be able to apply the scientific method and quantitative techniques in standardisation of foods using different processing techniques.
4	FT 103-B	Baking Technology	2021	<ul style="list-style-type: none"> - Understanding the General Characteristics, Principles and concept of technology of baking. - To understand the role of different ingredients and methods of processing in baking process - Familiarize with processing techniques of various bakery products and develop skills in organizing and maintenance of a baking industry.
5	FT 104-A	Community Nutrition	2021	<ul style="list-style-type: none"> - Students gain knowledge about nutrients in food and their functions. - Understand the nutritional problems of the community and consequences of deficiency of taking nutrients. - Apply skills for planning diets and techniques to assess the nutritional status of different age groups.
6	FT 104-B	Nutrition during life span	2017	<ul style="list-style-type: none"> - Students gain knowledge on the importance of nutrition and requirements during life span. - Comprehensive knowledge on analysing the nutritional requirements, principles and working applications during dietary modifications. - Evaluate nutrition products for composition, quality, and appropriateness of use and formulate dietary interventions to address nutritional deficiencies.
7	FT 105	101+103-A/103-B Practicals	2017	<ul style="list-style-type: none"> - The students will know about principles and working applications of different analytical techniques associated with food.

				<ul style="list-style-type: none"> - Perform skills in qualitative and quantitative estimation of nutrients in different foods. - Comprehensive knowledge on techniques of analysing, evaluating and application of foods in different processing techniques in foods.
8	FT 106	102+104-A/104-B Practicals	2017	<ul style="list-style-type: none"> - The students will be able to explore knowledge on various processing techniques of cereals, legumes and oilseeds. - Students acquire knowledge in various food applications and product preparations. - Understand the consequences of deficiency and menu planning. Knowledge about the different methods of nutritional assessment.
9	FT 107:	Human Values and Professional Ethics-I	2017	<ul style="list-style-type: none"> - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society. - Introducing different concepts of Bhagavad Gita and its applications in uplifting of values in the present society.
10	FT 201	Fruit and Vegetable Technology	2021	<ul style="list-style-type: none"> - Attain an overview on the classification composition and post-harvest handling technologies of fruits and vegetables to reduce postharvest losses and their value addition. - Impart the knowledge of processing, preservation and manufacture of fruits and vegetable based food products of fruits and vegetables. - Expertise in development of various Fruits & vegetables based products and assess the quality of fruit and vegetables and their products.
11	FT 202	Dairy Technology	2017	<ul style="list-style-type: none"> - Impart the knowledge of milk grading , composition and technologies of processing of milk and milk products. - Provide in-depth knowledge in various unit operations and developments in dairy processing. - Demonstrate the manufacturing of various dairy products and exemplify the quality of dairy products.
12	FT 203-A	Food Microbiology and Safety	2017	<ul style="list-style-type: none"> - Obtain knowledge about important genera of microorganisms associated with food and food spoilages.

				<ul style="list-style-type: none"> - Understand the various factors associated with growth, food spoilage and food-borne diseases of different microorganisms. - Demonstrate the use of standard methods and procedures for the microbiological analysis of food
13	FT 203-B	Nutrition in Emergencies And Disaster Management	2017	<ul style="list-style-type: none"> - Explain concepts on Epidemiology and its application in planning programs during emergencies and emergency situations in natural and manmade disasters. - Gain knowledge on nutrition surveillance and treatment in emergencies. - Knowledge on planning nutrition relief and rehabilitation in emergencies.
14	FT 204-A	Research Methodology	2017	<ul style="list-style-type: none"> - Awareness about terms like ‘variables’, ‘hypothesis’, research ‘and recognize the purpose of doing research. - Understand different types of research like experimental, survey, applied, action research etc., and differentiate advantages and disadvantages each type of research. - Critically apply knowledge to select a sample by using different sampling methods like probability and non-probability sampling and development of research proposal.
15	FT 204-B	Statistics and Computer Applications	2021	<ul style="list-style-type: none"> - Students familiarise the terms like ‘frequency distribution’, ‘Variance’ , ‘Correlation’ and its scope in research data - Understand different types of statistics that are used in research data. - Critically know the calculations of different statistics of research data and computer applications.
16	FT 205	201+203-A/203-B Practicals	2017	<ul style="list-style-type: none"> - Student will know about various fruit and vegetable processing techniques and attain practical knowledge in production and preparation of products. - Acquire knowledge on laboratory techniques to identify microorganisms in food. - To know the concepts on Epidemiology and its application in planning programs during emergencies.
17	FT 206	202+204-A/204-B Practicals	2017	<ul style="list-style-type: none"> - Students acquire knowledge of grading, composition, quality evaluation and processing techniques of milk and milk products. - Critically know the research procedures for identifying an ideal sample for

				<p>scientific research and able to prepare a research proposal in the appropriate scientific style .</p> <ul style="list-style-type: none"> - Students gain knowledge and understand the concepts of inferential statistics like t-test, chi-square, Correlation and Variance of application of statistics in data analysis.
18	FT 207	Human Values and Professional Ethics-II	2017	<ul style="list-style-type: none"> - Student will know the values of ethics in various fields including medical, social and business ethics. - The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life. - Introduction of several Natural values to be performed by Humans to lead a good and Peaceful life.
19	FT 301	Food Processing and Preservation Technology	2017	<ul style="list-style-type: none"> - Students able to understand the scope, principles and different methods of processing and preservation techniques. - Acquire knowledge of emerging technologies and their applications in food processing and preservation. - Understand the applications and limitations of food processing and preservation technology.
20	FT 302	Live stock and Sea Food Technology	2017	<ul style="list-style-type: none"> - Acquire knowledge of the structure, composition, nutritional quality of various, livestock and seafood. - Gain insight knowledge of slaughtering, carcass processing, processing methods used for processing meat poultry and fish. - Prepare various value-added products of egg, meat, poultry and sea foods.
21	FT 303-A	Technology of Spices, Condiments and Plantation crops	2017	<ul style="list-style-type: none"> - Students acquire knowledge, identification and post-harvest technologies of various spices, condiments and plantation crops. - Illustrate various value added products of spices, condiments and plantation crops. - Perceive Standards, specifications, packaging and Quality control measures of spices, condiments and plantation crops.
22	FT 303-B	Basics of Food	2017	<ul style="list-style-type: none"> - Student understands the basic Principles, overview of processing techniques

		Engineering		<p>and methods of food.</p> <ul style="list-style-type: none"> - Able to describe the types and properties of agro processing equipments like pasteurizer, spray drier and sealing equipments. - Enumerate processing equipments and maintenance of processing equipments
23	FT 304	301+302 Practicals	2017	<ul style="list-style-type: none"> - Student acquires knowledge of emerging technologies and their applications in various processing techniques and products of various foods by processing and preservation methods. - Understand the grades, structure, composition, processing and nutritional quality of various livestock and seafood products.
24	FT 305	Food Industry Management (T) + (Practicals)	2021	<ul style="list-style-type: none"> - Provide hands on experience with regard to different areas in food industries. - Acquaint and gain knowledge related to production, unit operations, quality control and marketing aspects of food industry. - Emphasize the prominence of food plant sanitation, food safety, standards, laws and regulation in food industry.
25	FT 306-A	Fundamentals of Food, Nutrition and Health	2017	<ul style="list-style-type: none"> - Gain knowledge on foods, food groups, balanced diet and importance of macro and micronutrients for different age groups in daily diet. - Comprehend knowledge on deficiency symptoms of different nutrients. - Apply skills to assess on nutritional problems in community.
26	FT 306-B	Dynamics in Food Preparation	2021	<ul style="list-style-type: none"> - Gain knowledge on principles of safe food preparation and cooking methods and effect of cooking on nutrients. - Apply knowledge about effect of cooking on nutrients. - Able to differentiate different cooking equipment and role of different food items in cookery.
27	FT 401	Food Safety Standards and Quality Control	2017	<ul style="list-style-type: none"> - Gain knowledge in current rules and regulations of food safety standards and quality assurance. - Understand the insight quality evaluation of different foods by standard methods. - Develop skills for quality analysis and assurance of food quality.
28	FT 402	Food Product Development and Marketing	2017	<ul style="list-style-type: none"> - Elucidate the process of new food product development process to generate ideas, develop concept to test market and in food industry. - Acquire the skill to design and development of new food product and analyse the quality of the product.

				<ul style="list-style-type: none"> - Student able to design, demonstrate the skills in food process, organoleptic evaluation and nutritional label of food products as a team work.
29	FT 403-A	Nutrition for Health and Fitness	2017	<ul style="list-style-type: none"> - Understand the concepts of Health, Nutrition, physical activity, physical fitness and methods of evaluation. - Describe the role of nutrients in physical performance, weight management, obesity and Energy metabolism pathways during physical activity. - Gain knowledge on concepts of physical activity, physical fitness and the importance of nutrients in Sports.
30	FT 403-B	Unit Operations in Food Industry	2017	<ul style="list-style-type: none"> - Important preliminary operations in food processing industries and understand the principle of Unit operation in food industry. - Impart knowledge on Safety, sanitation and Effluent Treatment in food industry. - Know the different pre and post processing operations as storage and packaging foods etc.
31	FT 404	401+402 Practicals	2017	<ul style="list-style-type: none"> - Gain knowledge on subjective and objective evaluation methods of foods with safety and standards. - Exemplify various speciality food products and their applications, acquire the skill to design and development of new food product and analyse the quality of the product.
32	FT 405	Technology of Packaging (T+P)	2021	<ul style="list-style-type: none"> - Enable the students to understand the regulations of packaging and packaging material testing. - Knowledge of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life. - Able to utilize some of the new innovations in food packaging to improve product stability and/or to extend the product shelf-life
33	FT 406-A	Child Welfare Programmes	2017	<ul style="list-style-type: none"> - Understand the different developments like physical, cognitive, language and social development during childhood. - Apply knowledge to understand normal development and developmental delays during childhood.
34	FT 406-B	Disaster Management	2017	<ul style="list-style-type: none"> - Understand natural disasters (like floods, drought, cyclone, earthquakes, global warming etc); Nuclear disasters; Biological disasters; - Illustrate the efforts made by the NGOs, Community based organizations and local administration in disaster management.

37. Mathematics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1. 1	MA 101	Algebra	2021	<ol style="list-style-type: none"> 1. Identify the concept of action and conjugation. 2. Explain the applications of Sylow's theorems 3. Understand homomorphism and ideals in Rings. 4. Understand U.F.D, E.D and Polynomial Rings
2.	MA 102	Real analysis	2021	<ol style="list-style-type: none"> 1. Understand the concepts of Riemann Stieltjes integration and Differentiation. 2. Understand Uniform Convergence and continuity. 3. Learn comparison tests at a and infinity. 4. Analyze the concept of functions of several variables.
3.	MA 103A	Ordinary Differential equations	2021	<ol style="list-style-type: none"> 1. Learn boundary value problems, Eigen values and Eigen functions 2. Solve the second order linear questions. 3. Apply knowledge on

				<p>special functions of Mathematical Physics.</p> <p>4. Understand the method of successive approximation and solve the problems related to Picard's theorem</p>
4.	MA 103 B	Linear Algebra	2021	<p>Solve the system of linear equations</p> <p>2 Understand the concept of vector space, basis and dimension. Analyze the linear Transformation</p> <p>3. Explain the direct sum decompositions</p> <p>4. Understand the Bilinear forms.</p>
5.	MA 104A	Numerical Methods	2021	<p>Solve Algebraic and Transcendental polynomial equations.</p> <p>2. Understand Interpolation, Differentiation, Integration, the solution of Differential Equations</p> <p>3. Solving the direct methods, matrix inversion methods and iterative method...etc.</p> <p>4. Analyze and evaluate the accuracy of common Numerical methods.</p>
6.	MA 104B	Lattice theory	2021	<p>Know Partly Ordered Sets.</p> <p>2. Understand Lattices as Algebraic structures</p> <p>3. study complete Lattices.</p> <p>4. Compare the distributive and modular lattices</p>

7.	MA 105	Complex Analysis	2021	<ol style="list-style-type: none"> 1. Decide when and where a given function is analytic and be able to find its series development 2. Describe conformal mappings between various plane regions 3. Describe basic properties of complex integration and having the ability to compute such integrals. 4. Understand Power series and expansion of analytic function.
8.	MA 106	Discrete Mathematics	2021	<ol style="list-style-type: none"> 1. Use standard Normal Forms-Disjunctive-Conjunctive Principal Disjunctive 2. Understand Inference Theory of the Predicate Calculus 3. Understand Lattices and Boolean Functions. 4. Understand basic concepts of graph theory.
9.	MA 201	Galois Theory	2021	<ol style="list-style-type: none"> 1. Apply the knowledge on polynomials solvable by radicals, Extension field. 2. Understand the Explain the normal and separable extensions and concepts such as extension fields and splitting fields 3. Study the roots of polynomials specially quintic polynomials which is the cause to develop Galois theory. 4. Solve the problems on cyclotomic polynomials.
10.	MA 202	Partial Differential Equations	2021	Analyze the origin of first order PDEs and Integral surfaces passing through a given curve

				<p>2. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method.</p> <p>3. Solve the various, methods on Partial Differential Equations of the Second order.</p> <p>4. Obtain equipotential surfaces using Laplace's equation.</p>
11.	MA 203A	Topology	2021	<p>1. Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, closed sets, basic and sub-basis.</p> <p>2. Understand Topological Spaces, definition & examples.</p> <p>3. They know what we mean by connectedness, compactness, and hausdorf property and their general characteristics.</p> <p>4. Understand the Countability axioms, the separation axioms and normal spaces. And also the classical theorems such as the Uryshon lemma, the Tietze extension theorem.</p>
12.	MA 203B	Semi group Theory	2021	<p>1. Discuss semi groups with the properties.</p> <p>2. Explain The structure of D.Classes – regular semigrups.</p> <p>3. Obtain proofs of Rees's Theorem and Primitive idempotents.</p> <p>4. Know the congruences on completely O-</p>

				Simple semi groups
13.	MA 204A	Advanced Complex Analysis	2021	<ol style="list-style-type: none"> 1. To learn Laurent Series-Singular Points. 2. Explain the basic properties of complex integration and compute such integrals. 3. Learn topics of contemporary Advanced complex analysis in particular spaces of holomorphic functions, entire functions, harmonic functions and conformal mapping functions. 4. Understand the Infinite product and Partial Fraction Expansions.
14.	MA 204B	Nonlinear Analysis	2021	<ol style="list-style-type: none"> 1) Explain fixed point theory and its applications by well known theorems. 2) Analyse the approximations in Normed spaces, strict convexity – uniform, Chebyshev polynomials, Hilbert space , splines. 3) Use of complex analysis in spectral theory, Banach algebras 4) Evaluation of spectral theory in normed spaces, finite dimensional normed spaces.
15.	MA 205	Measure and Integration	2021	<p>Compute Lebesgue measures.</p> <ol style="list-style-type: none"> 2. Compute Lebesgue integrals of bounded functions over a set of finite measure 3. Solving the Differentiation and Integration of Monotone functions. 4. Understand the L^p Spaces, The MinKowski and Holder inequalities, Convergence and

				completeness
16.	MA 206	Mathematical Statistics	2021	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <p>2. Apply the knowledge of Binomial, Poisson, Gamma, chi-square, normal distribution in solving various problems,.</p> <p>2. To explain stochastic convergence</p> <p>3. To discuss measures of quantity of estimations</p>
17.	MA 301	Commutative Algebra	2021	<p>To understand the ideals, Modules and operations on them.</p> <p>2.To learn the structures of composition series with ACC and DCC</p> <p>2. To study the theoretical properties of Noetherian rings</p> <p>3. Explain decomposition theorem and applications.</p> <p>5. To develop applications in the different fields.</p>
18.	MA 302	Functional Analysis	2021	1) They can work with different

				<p>distance metrics and normed spaces.</p> <ol style="list-style-type: none"> 2) Understand continuous linear transformations and the Hahn-Banach Theorem. 3) Comprehend the Open mapping theorem and Closed graph theorem. 4) Construct orthonormal sets and conjugate spaces. 5) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. <p>Comprehend the ideas of determinants and the spectrum of an operator</p>
19.	MA 303 A	Differential Geometry	2021	<p>define space curves , curvature and torsion of a curve.</p> <ol style="list-style-type: none"> 2. Parameterize surfaces and use the metric tensor. Calculate isometries. 3. treat geodesic curves and parallel translation . 4. calculate and analyse curvature of surfaces in different settings. s5. know the concept of tensor and recognize tensors that are used in mechanics , <p>Image processing and theory of relativity.</p>
20.	MA 303 B	Algebraic coding theory	2021	Analyse Error detecting and error correcting codes.

				<p>2. Understand and apply algorithms in applications like sending messages without errors.</p> <p>3. Use bounds for different types of codes.</p> <p>4. Understand the polynomial encoding and decoding.</p>
21.	MA 304	Classical Mechanics	2021	<p>1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation.</p> <p>2) Derive the Lagrange's Equation from Hamilton's Principle.</p> <p>3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems.</p> <p>4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action.</p> <p>5) Get familiar with canonical transformations, conditions of cononicity of a transformation in terms of Lagrange and Poisson brackets.</p>
22.	MA 305	MAT-LAB	2021	<p>1. Understand the mathematical operations & functions.</p> <p>2. Write a program to addition & multiplication matrices.</p> <p>3. Understand the 2-D plotting and 3-D plotting techniques.</p> <p>4. Solve algebraic and transcendental equations.</p>
23.	MA 306A	Business Mathematics	2021	<p>1. Apply the knowledge in mathematics</p>

				<p>(algebra, matrices, calculus) in solving business problems.</p> <ol style="list-style-type: none"> Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business. Explain the concepts and use equations, formulae and mathematical expressions and relationships in a variety of contexts Understand The Binary Octal , Octal, Decimal and Hexadecimal Systems.
24.	MA 306B	Fundamentals of Mathematical Statistics	2021	<ol style="list-style-type: none"> To learn the fundamental concepts of statistics and correlation analysis To analyse regression lines. To explain tests of significance To solve liner equations by matrix methods
25.	MA 401	Number Theory	2021	<ol style="list-style-type: none"> Understand arithmetical Functions. Use functions $\Phi(n)$, $\Pi(n)$, $\Pi(n)$. Understand the definitions of congruences, residue classes and least residues Apply legendary polynomial and application of reciprocity law.
26.	MA 402	Banach Algebra	2021	<ol style="list-style-type: none"> Understand different types of Banach

				<p>Algebras with examples.</p> <ol style="list-style-type: none"> 2. Know the essence of Gelfand mapping 3. Understand the Application of Commutative C^*- algebras. 4. Derive the applications of Banach Algebra in analysis, Fourier series, Boolean Algebras and other significant areas of mathematics.
27.	MA 403A	Graph Theory	2021	<p>Able to define basic concepts of graphs</p> <ol style="list-style-type: none"> 2. Utilize the Algorithms to find the shortest path, Optimal tree from a given graph. 3. construct reliable communication network. 4. Understand the concepts of practical problems like Chinese postman problem and travelling salesman problem
28.	MA 403B	Approximation Theory	2021	<ol style="list-style-type: none"> 1) Know the Basic concepts of Metric spaces And Normed Linear space. 2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces. 3) Knows Bernstein's lethargy theorem and its practical and theoretical implications. 4) Be able to use and analyze the basic methods for polynomial approximations.
29.	MA 404	Operations Research for Industry and Community Development	2021	<ol style="list-style-type: none"> 1) Formulate some real life problems into Linear Programming Problems. 2) Understand Dynamic Programming.

				<p>3) Solve the problems of Game with pure Strategies and Mixed Strategies.</p> <p>4) Construct Reliable Networks.</p>
30.	MA 405	Computer Oriented Numerical Methods	2021	<ol style="list-style-type: none"> 1. Gain Knowledge in C-Language 2. Able to use commands and operations of C. 3. Solve integration and ODE problems by numerical methods 4. Write the programming to solve problems in numerical methods.
31.	MA 406A	Business Mathematics-II	2021	<ul style="list-style-type: none"> • Able to solve problems on Time and work, Distance • Understand the mixtures and also learn to calculate the Simple interest and compound interest. • Find roots of Algebraic equations and sum and terms of given series. • Analyse the data from charts and graphs..
32.	MA 406B	Mathematics for Social Sciences	2021	<ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases, algebra of Transformations and orthogonal components. 2. Understand the concepts of Limit, continuity & differentiation of functions. 3. Apply Integrals to find areas, length & volume of regions. 4. Apply the numerical Techniques to solve differential equations & Algebraic equations.

Applied Mathematics

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1.	AMA 101	Methods of Applied Mathematics	2021	<p>Expand a function in a Fourier series and able to know under what conditions such an expansion is valid.</p> <p>2. Aware of the connection between integral transforms (Fourier and Laplace) and be able to use the latter to solve mathematical problems relevant to the physical sciences.</p> <p>3. Understand the applications of Sylow theorems.</p> <p>4. Describe Unique Factorization and Euclidean Domains</p>
2.	AMA 102	Real Analysis	2021	<p>Understand the concepts of Riemann Integration and Differentiation.</p> <p>2. To learn the different types of Sequences and Series of Functions, Equicontinuous Families of Functions.</p> <p>3. Understand Uniform Convergence and continuity.</p> <p>4. Apply the Stone-Weierstrass theorem.</p>
3.	AMA 103A	Ordinary Differential Equations	2021	<p>1. Recognize and classify O.D.Es.</p>

				<ol style="list-style-type: none"> 2. Learn boundary value problems, Eigen values and Eigen functions 3. Apply knowledge on special functions of Mathematical Physics. 4. Understand the method of successive approximation and solve the second order linear questions. 5. Solve the problems related to Picard's theorem 6. Identify research problems where D.Es can be used . 7. Analyse engineering problems like series/parallel circuits etc using 1st and 2nd order O.D.Es.
4.	AMA 103B	Viscous Flows	2021	<p>Employ Bernoulli's equation for real flow and deduce expressions for orifice meter and Venturimeter.</p> <ol style="list-style-type: none"> 2. Establish Hagen Poiseuille's equation for laminar flow through pipe and parallel plates. 3. The course provides the student with knowledge about: - Formulating and solving problems in fluid mechanics where viscosity and heat conductivity are of importance, in particular at high Reynolds numbers where the boundary layer approximation applies. - Primary focus is on the laminar flow regime. Briefly about stability and transition to turbulence. - Quantitative methods for classical cases, such as Stokes problems, stagnation point flow, Blasius and Falkner-Skan problems, and

				integral methods for other boundary layers with pressure gradient and possible separation
5.	AMA 104A	Numerical Methods	2021	<p>solve Algebraic and Transcendental polynomial equations.</p> <p>2.Learn how to apply the Numerical method for various Mathematical operations and tasks.</p> <p>3.Understand Interpolation,Differentiation,Integration,the solution of Differential Equations</p> <p>4.Analyse and evaluate the accuracy of common Numerical methods.</p>
6.	AMA 104 B	Boundary Value Problems	2021	<p>. Use the knowledge of Legendre and Chebyshev polynomials.</p> <p>2. Apply Fourier and Hankel transforms in engineering problems.</p> <p>3. Solve boundary value problems.</p> <p>4. Understand the probability theory.</p>
7.	AMA 105	Complex Analysis	2021	<ol style="list-style-type: none"> 1. Identify curves and regions in the complex plane defined by simple expressions. 2. Describe basic properties of complex integration and having the ability to compute such integrals. 3. Decide when and where a given function is analytic and be able to find it series development. 4. Describe conformal mappings between various plane regions. 5. Apply the concepts of Complex Analysis in

				many branches of mathematics, including algebraic geometry, number theory, analytic combinatorics, applied mathematics; as well as in physics, including the branches of hydrodynamics, thermodynamics and particularly quantum mechanics.
8.	AMA 106	Discrete Mathematics	2021	<ol style="list-style-type: none"> 1. Use standard notations of propositional logic. 2. Understand the truth tables for expressions involving negation, conjunction, and disjunction 3. Determine if a logical argument is valid or invalid. <p>Find concepts and notations from discrete mathematics are useful in studying Automata theory ,Number theory and mathematical cryptography</p>

9.	AMA 201	Mathematical Modeling	2021	<ol style="list-style-type: none"> 1) Understand what a mathematical model is and explain the series of steps involved in a mathematical modeling process. 2) Identify some simple real-life problems that can be solved using mathematical models, model the problem, solve the resulting problem, and interpret the solution. 3) Acquire basic mathematical modeling skills that will enable them carry out simple modeling tasks individually or as a group. 4) State and explain the different classifications of mathematical models stating examples in each class. 5) Analyze the importance of partial differential equations in mathematical modeling. 6) Frame quantitative problems and model them mathematically.
10.	AMA 202	Partial Differential Equations	2021	<ol style="list-style-type: none"> 1. Identify linear and nonlinear PDE and solve nonlinear PDE by Charpit's method. 2. Apply Variables separable methods to solve Laplace Equation in cylindrical or spherical coordinates. 3. Obtain equipotential surfaces using Laplace's equation. 4. Understand the importance of partial differential equations in geometry, physics and other

				subjects.
11.	AMA 203A	Topology	2021	<ol style="list-style-type: none"> 1. Understand to construct topological spaces from metric spaces and using general properties of neighbourhoods, open sets, closed sets, basic and sub-basis. 2. Apply the properties of open sets, closed sets, interior points, accumulation points and derived sets in deriving the proofs of various theorems. 3. To understand the concepts of countable spaces and separable spaces. 4. They know what we mean by connectedness, compactness, and hausdorff property and their general characteristics. 5. Understand the Countability axioms, the separation axioms and normal spaces. <p>Understand the classical theorems such as the Uryshon lemma, the Tietze extension theorem</p>
12.	AMA 203B	Magneto Hydro Dynamics	2021	<p>Understanding the basic concepts and the equations of flow of viscous fluids. Understanding the electromagnetic induction mechanism which has its origin in the movement of fluids that are good electrical conductors</p> <ol style="list-style-type: none"> 2. Ability to translate a magnetic hydrodynamic problem in an appropriate mathematical form. 3. Ability to interpret the solutions of the equations established in physical terms.
13.	AMA 204A	Advanced Complex Analysis	2021	<ol style="list-style-type: none"> 1. Explain the basic properties of complex integration and compute such integrals. 2. Learn topics of contemporary Advanced complex analysis in particular spaces of

				<p>holomorphic functions, entire functions, harmonic functions and conformal mapping functions.</p> <ol style="list-style-type: none"> 3. Apply advanced techniques to evaluate definite integrals and differential equations in applied areas. 4. Explain general principles of conformal mapping. 5. Compute the residue of a function and use the Residue Theory to evaluate a contour integral or an integral over the real line
14.	AMA 204B	Nonlinear Analysis	2021	<ol style="list-style-type: none"> 1) Explain fixed point theory and its applications by well known theorems. 2) Analyse the approximations in Normed spaces, strict convexity – uniform, Chebyshev polynomials, Hilbert space , splines. 3) Evaluation of spectral theory in normed spaces, finite dimensional normed spaces. 4) Spectral properties of boundary linear operator, compact linear operator, Resolvent and spectrum. 5) Use of complex analysis in spectral theory, Banach algebras.
15.	AMA 205	Measure and Integration	2021	<p>Compute Lebesgue measures.</p> <ol style="list-style-type: none"> 2. Establish the measurability or non-measurability of sets and functions. 3. Approximate measurable functions by simple and step functions. 4 .Compute Lebesgue integrals of bounded

				<p>functions over a set of finite measure.</p> <p>Explain Fourier analysis.</p> <p>5. Decide under which conditions the fundamental theorem of calculus is applicable in the context of Lebesgue integration.</p>
16.	AMA 206	Mathematical Statistics	2021	<p>To learn the fundamental concepts of statistics and techniques required for data analysis.</p> <p>2. To explain stochastic convergence</p> <p>3. To discuss measures of quantity of estimations</p> <p>4. Study confidence intervals of variances.</p> <p>5. Understand Rao-Blackwell theorem and Rao Cramer's inequality</p> <p>6. Able to analyze the data of practical problems.</p>
17.	AMA 301	Continuum Mechanics	2021	<p>1) Be able to describe motion, deformation and forces in a continuum.</p> <p>2) Be able to derive equations of motion and conservation laws for a continuum.</p> <p>3) Understand constitutive models for fluids and viscoelastic solids.</p> <p>4) Formulate and solve specific technical problems of displacement, strain and stress.</p> <p>5) Perform experiments with stresses and</p>

				<p>deformations.</p> <p>Numerically model and analyse the stresses and deformations of simple geometries under an arbitrary load in both solids and liquids</p>
18.	AMA 302	Functional Analysis	2021	<ol style="list-style-type: none"> 1) They can work with different distance metrics and normed spaces. 2) Understand continuous linear transformations and the Hahn-Banach Theorem. 3) Comprehend the Open mapping theorem and Closed graph theorem. 4) Construct orthonormal sets and conjugate spaces. 5) Understand the relevance of self-adjoint operators, normal, unitary operators and projections. 6) Comprehend the ideas of determinants and the spectrum of an operator.
19.	AMA 303A	Differential Geometry	2021	<ol style="list-style-type: none"> 1. Determine and calculate curvature of curves in different coordinate systems. 2. Parameterize surfaces and use the metric tensor. Calculate isometries. 3. Treat geodesic curves and parallel translation. 4. Calculate and analyse curvature of surfaces in different settings. 5. Know the concept of tensor and recognize tensors that are used in mechanics, image processing and theory of relativity.

20.	AMA 303 B	Mathematical Methods	2021	<p>Knows and can use: a) concepts, results and methods from real analysis of single-variable functions related to limits, continuity, differentiation, integration and differential equations. b) concepts, results and methods related to systems of linear equations. c) numerical methods for solving equations, integrals and differential equations.</p> <p>2.Knows some engineering applications of mathematics.</p>
21.	AMA 304	Classical Mechanics	2021	<ol style="list-style-type: none"> 1) Understand D' Alembert's Principle and simple applications of the Lagrangian Formulation. 2) Derive the Lagrange's Equation from Hamilton's Principle. 3) Study the concept of the Equations of Motion and the Equivalent One-Dimensional Problems. 4) Distinguish the concept of the Hamilton Equations of Motion and the Principle of Least Action. 5) Get familiar with canonical transformations, conditions of cononicity of a transformation in terms of Lagrange and Poisson brackets.
22.	AMA 305	MAT-LAB	2021	<p>Understand the mathematical operations & functions.</p> <p>2. Write a program to addition & multiplication</p>

				<p>matrices.</p> <p>3. Understand the 2-D plotting and 3-D plotting techniques.</p> <p>4. Solve algebraic and transcendental equations.</p>
23.	AMA 306A	Business Mathematics-I	2021	<ol style="list-style-type: none"> 1. Apply the knowledge in mathematics (algebra, matrices, calculus) in solving business problems. 2. Analyse and demonstrate mathematical skills required in mathematically intensive areas in Economics and business 3. Explain the Concepts and use Equations, formulae and Mathematical expressions and in a variety of contexts. 4. Understand the Binary ,octal , decimal and hexadecimal system.
24.	AMA 401	Number Theory	2021	<ol style="list-style-type: none"> 1. the Arith Understand metical Functions. 2. Use $\Phi(n)$, $\Pi(n)$, $\mathcal{J}(n)$. 3. Understand the definitions of congruences, residue classes and least residues 4. Apply legendary polynomial and application of reciprocity law.
25.	AMA 402	Fluid Dynamics	2021	<ol style="list-style-type: none"> 1) Be familiar with continuum model of fluid flow and classify fluid/flows based on physical properties of a fluid/flow along with Eulerian and Lagrangian descriptions of fluid motion.

				<p>2) Derive and solve equation of continuity, equations of motion, vorticity equation, equation of moving boundary surface, pressure equation and equation of impulsive action for a moving inviscid fluid.</p> <p>3) Understand Boundary layer Equations.</p> <p>Solve Analytic Boundary layer equations</p>
26.	AMA 403A	Graph Theory	2021	<p>Able to define basic concepts of graphs</p> <p>2. Utilize the algorithms to find the shortest path, Optimal tree from a given graph</p> <p>3 . Construct the Reliable Communication networks</p> <p>4. Understand the concepts of practical problems like Chinese postman problem and travelling salesman problem.</p>
27.	AMA 403B	Approximation Theory	2021	<p>1) Know the basic concepts of metric space and normed linear space</p> <p>2) Knows existence and uniqueness theorems for the best approximations in various Banach spaces.</p> <p>3) Knows Bernstein's lethargy theorem and its practical and theoretical implications.</p> <p>4) Be able to use and analyze the basic methods for polynomial approximations, interpolation.</p>

28.	AMA 404	Operations Research for Industry and Community Development	2021	<ol style="list-style-type: none"> 1) Formulate some real life problems into Linear Programming Problem. 2) Solve linear programming problem by using algebraic graphical method. 3) Use the simplex method to find an optimal vector for the standard linear programming problem and the corresponding dual problem. 4) Prove the optimality condition for feasible vectors for Linear Programming Problem and Dual Linear Programming Problem. 5) Use operations research to solve transportation problems during the allocation of trucks to the formulate operation research models to solve real life problem. 6) Understand Queuing theory basic concepts and solve queuing theory problems. 7) Deterministic inventory models, static economic, classic EOQ models.
29.	AMA 405	Computer Oriented Numerical Methods	2021	<p>Gain Knowledge in C-Language</p> <ol style="list-style-type: none"> 2. Able to use commands operations of C. 3. Write the programming to solve problems in numerical methods.

30.	AMA 406A	Business Mathematics-II	2021	<ol style="list-style-type: none"> 1. Able to solve problems on Time and work, Distance 2. Understand the mixtures 3. Calculate the Simple interest and compound interest. 4. Analyse the data from charts and graphs.
31.	AMA 406B	Mathematics for Social Sciences	2021	<ol style="list-style-type: none"> 1. Understand the concepts of vector spaces with bases. 2. Discuss algebra of Transformations and orthogonal components. 3. Understand the concepts of Limit, continuity & differentiation of functions. 4. Apply Integrals to find areas, length & volume of regions. 5. Apply the numerical Techniques to solve differential equations & Algebraic equations.

38. Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
MB-101	Introductory Microbiology	2021	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae

MB-102	Microbial Physiology	2021	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
MB-103	Bio chemistry	2021	Through this course the students are exposed to importance of biological macromolecules. They acquire knowledge in the quantitative and qualitative estimation of biomolecules. They study the influence and role of structure in reactivity of biomolecules. At the end of the course, the students have a thorough understanding on the role of biomolecules and their functions
MB 104	Biophysics and biostatistics	2021	This course imparts the knowledge of basic statistical methods to solve problems Students are taught to operate various statistical software packages. By the end of the course, the students are able to appreciate the importance of statistics in research and prepares them for a career in research Be able to gain knowledge on basic concepts in statistics.
MB-201	Molecular Biology	2021	The course teaches the students about genes at molecular level. They learn about DNA, RNA and their replication, mutations, DNA repair mechanism. The course outcome is to train the students in understanding genetics and relate modern DNA technology for disease diagnostics and therapy
MB-202	Recombinant DNA technology	2021	This course teaches RDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries. Student of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering.
MB 302	b) Bioprocessing of Industrial Microorganisms	2021	Give elaborate knowledge on Health care products. Provide in depth knowledge about microbial antibodies and recombinant products. Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.

MB-303	a) Pharmaceutical Microbiology	2021	This is an interdisciplinary course that covers the aspects involved in understanding the pharmacokinetics and drug metabolism involving nano-based drug delivery system. The students learn about various pharmacokinetics parameters through mathematical models, design protocol for BA/BE study and its interpretation, design invitro dissolution studies for various drugs. At the end of the course, the students will have the necessary knowledge in the area in pharmacokinetics.
MB-303	b) Down stream processing	2021	The course introduces the analytical methods used in separation science . They learn about various analytical techniques that are routinely used for separation of biomolecules and their components. The course teaches students the advantages of separation science as applied to biotechnology
MB-306 a	Computational biology	2021	This allied paper introduces the students to concepts in bioinformatics. The student will be able to apply basic principles of biology, computer science and mathematics to address complex biological problems
MB-402	Industrial based Microbial clean technology	2021	Microbial cleaning takes advantage of naturally-occurring microbes to remove a wide variety of contaminants from various surfaces. The method is based on the affinity of microbes for hydrocarbons that are digested, producing harmless carbon dioxide, water, and soluble fatty acids. The microbes are nonpathogenic and are safe to handle and dispose. The process is environmentally-friendly and is less expensive than solvent cleaning, but it is not applicable to high precision cleaning applications. Typical applications include parts washing; oil and grease removal from concrete and other floor surfaces, and from drains and grease traps; cleaning and disinfection in healthcare facilities. Able to design procedures, record research methodology and interpret the research
MB-403	a) Industrial production of Microbial product	2021	Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.
	b) Industrial Microbial	2021	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk,

	technology		fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts.
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Industrial Microbiology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
IMB-101	Introductory Microbiology	2021	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae
IMB-102	Microbial Physiology	2021	Be able to know about the nutrition and microbial growth. Be able to know about photosynthesis and carbon. Be able to know in depth details about aerobic and anaerobic respiration. Be able to know in depth about various pathways in protein and nucleotide metabolisms
IMB-103	Bio chemistry	2021	Through this course the students are exposed to importance of biological macromolecules. They acquire knowledge in the quantitative and qualitative estimation of biomolecules. They study the influence and role of structure in reactivity of biomolecules. At the end of the course, the students have a thorough understanding on the role of biomolecules and their functions
IMB 104	Biophysics and biostatistics	2021	This course imparts the knowledge of basic statistical methods to solve problems Students are taught to operate various statistical software packages. By the end of the course, the students are able to appreciate the importance of statistics in research and prepares them

			for a career in research Be able to gain knowledge on basic concepts in statistics.
IMB-201	Molecular Biology	2021	The course teaches the students about genes at molecular level. They learn about DNA, RNA and their replication, mutations, DNA repair mechanism. The course outcome is to train the students in understanding genetics and relate modern DNA technology for disease diagnostics and therapy
IMB-202	Recombinant DNA technology	2021	This course teaches RDNA technology techniques and their application in the field of genetic engineering. They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries. Student of this course have knowledge on gene manipulation, gene expression, etc which prepares them for further studies in the area of genetic engineering.
IMB 302	b) Bioprocessing of Industrial Microorganisms	2021	Give elaborate knowledge on Health care products. Provide in depth knowledge about microbial antibodies and recombinant products. Provide detailed knowledge about organic acids and enzymes. Gives in depth knowledge on oxidative transformation.
IMB-303	a) Pharmaceutical Microbiology	2021	This is an interdisciplinary course that covers the aspects involved in understanding the pharmacokinetics and drug metabolism involving nano-based drug delivery system. The students learn about various pharmacokinetics parameters through mathematical models, design protocol for BA/BE study and its interpretation, design invitro dissolution studies for various drugs. At the end of the course, the students will have the necessary knowledge in the area in pharmacokinetics.
IMB-303	b) Down stream processing	2021	The course introduces the analytical methods used in separation science . They learn about various analytical techniques that are routinely used for separation of biomolecules and their components. The course teaches students the advantages of separation science as applied to biotechnology
IMB-306 a	Computational biology	2021	This allied paper introduces the students to concepts in bioinformatics. The student will be able to apply basic principles of biology, computer science and mathematics to address complex biological problems
IMB-402	Industrial based Microbial clean technology	2021	Microbial cleaning takes advantage of naturally-occurring microbes to remove a wide variety of contaminants from various surfaces. The method is based on the affinity of microbes for hydrocarbons that are digested, producing harmless carbon dioxide, water, and soluble fatty

			acids. The microbes are nonpathogenic and are safe to handle and dispose. The process is environmentally-friendly and is less expensive than solvent cleaning, but it is not applicable to high precision cleaning applications. Typical applications include parts washing; oil and grease removal from concrete and other floor surfaces, and from drains and grease traps; cleaning and disinfection in healthcare facilities. Able to design procedures, record research methodology and interpret the research
IMB-403	a) Industrial production of Microbial product	2021	Microbes are the major components of biological system on this earth. They are present everywhere, even at sites where no other life could possibly exist. Many microbes are useful to human beings. We use microbes and microbial derived products almost every day like curd and other fermented foods like idli, dosa, bread, etc. Microbes are also used in most of the industries. Alcohol, antibiotics, vinegar, etc are important microbial products. Microbes are very helpful in sewage treatment, biogas production and preparation of biofertilizers as well. So it's clear from this chapter that microbes play a very important role in welfare of human society.
	b) Industrial Microbial technology	2021	Students in this course will learn about microbes in food, spoilage of food and preservation techniques of food. Through this course, they also learn about microbiology of milk, fermented dairy products, industrially important microorganisms and process of industrial production of alcohol, beer, wine, SEP and mushrooms. At the end of the course, the student will be able to use the preservation techniques for food and use this experience to be employed as quality control experts.

39. Physics

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
PHY101	Classical Mechanics and Theory of Relativity	2021	<ul style="list-style-type: none"> • Understand the necessity of Action, Lagrangian, and Hamiltonian formalism. • Used D'Alembert principle and calculus of variations to derive the Lagrange equations of motion. • Describe the motion of a mechanical system using Lagrange-Hamilton formalism.

			<ul style="list-style-type: none"> • Apply essential features of a relativity problem (like motion under central force, periodic motions) to set up and solve the appropriate physics problems.
PHY102	Solid State Physics	2021	<ul style="list-style-type: none"> • Gain in-depth knowledge about the formation of various crystal structures and performing calculation on their elemental parameters. • Differentiate between various lattice types based on their lattice dynamics and then explain thermal properties of crystalline solids • Understand the electron motion in periodic solids and origin of energy bands in semiconductors. • To explain the basic transport theory for understanding the transport phenomenon in solids
PHY103(a)	Analog and Digital Electronics	2021	<ul style="list-style-type: none"> • Understand working of Different Semiconductor devices (Construction, Working Principles and V-I characteristics) and their applications. • Explain the construction and working of Operational amplifiers and applications • Design Digital circuits and their applications. • Understand the working of various analog communication techniques
PHY103(b)	Computational Methods & C Language	2021	<ul style="list-style-type: none"> • Apply basic knowledge of computational physics in solving the physics problems. • Program with the C or any other high-level language • Use various numerical methods in solving physics problems. • Analyze the outcome of the algorithm/program graphically.
PHY103(c)	Sensors and Transducers	2021	<ul style="list-style-type: none"> • Apply basic knowledge of sensors and transducers in understanding the measurement systems. • Study and understanding of various types of sensors • Study and understanding of various types of Transducers • Analyze the outcome of the signal conditioners like filters, detectors

			and amplifiers
PHY104(a)	Atomic and Molecular Physics	2021	<ul style="list-style-type: none"> • Have the basic knowledge of different atomic models, quantum nos and atomic spectra. • Understand the classical/quantum description of effect of magnetic field and Electric field on spectral lines. • Know the different types of rotation of the molecules and rotational constants and intern structure of the molecules. • Study the vibrational spectra of molecules and applications of vibrational spectra of molecules and applications of vibrational spectra
PHY104(b)	Optical, Microwave and Satellite Communications	2021	<ul style="list-style-type: none"> • understand microwave communication system • Understand functioning of Radar systems • Differentiate losses in optical fiber link and state transmission characteristics of optical fiber
PHY104(c)	Computer Architecture and Networking	2021	<ul style="list-style-type: none"> • Understand basics of logic circuits and computer functional blocks • Know machine instructions and assembly languages • Comprehend I/O organization • Appreciate differences between different memory devices
PHY201	Statistical Mechanics	2021	<ul style="list-style-type: none"> • Use ensemble theory to explain the behavior of Physical systems • Explain the statistical behavior of Bose-Einstein and their applications. • Fermi –Dirac Statistics & Fluctuations
PHY202	EM Theory, Lasers & Modern Optics	2021	<ul style="list-style-type: none"> • Understand the electro statistics and magneto statistics and also the properties of propagation of electromagnetic radiation in different media • Know about the properties of laser beam and the working of different lasers and applications • Describe the fourier analysis in optics problems and to understand the concept of holography • Analyze the propagation of light in optical fibers and to know the various applications of optical fibers

PHY203(a)	Nuclear Physics	2021	<ul style="list-style-type: none"> • Understand the basics of nuclear forces and their characteristics and also about various nuclear models • Know the various types of nuclear reactions and nuclear decay system • Understand the basic principles in nuclear accelerators and reactors and also their applications • Describe the various elementary particles and their conservation layers.
PHY203(b)	IC fabrication Techniques	2021	<ul style="list-style-type: none"> • Understand and compare crystal growth and Epitaxial deposition techniques • Understand structure and process of oxidation • Study the diffusion processes • Understand vacuum deposition techniques
PHY203(c)	Advanced Microprocessors And its Applications	2021	<ul style="list-style-type: none"> • Understanding of microprocessor architecture and evaluation • Develop skill of writing programs in ALP for various applications of 8085 & 8051 • Interface various peripherals with 8085 & 8051. • Understanding interrupts and direct memory access
PHY204(a)	Mathematical Physics	2021	<ul style="list-style-type: none"> • Understand the basics and applications of special functions in all the branches of Physics. • Use Fourier series and transformations as an aid for analyzing physical problems. • Apply integral transform to solve mathematical problems of Physics interest • Formulate and express a physical law in terms of complex variables and simplify it by use of coordinate transforms.
PHY204(b)	Introduction to VLSI design	2021	<ul style="list-style-type: none"> • Demonstrate a clear understanding of CMOS fabrication flow and technology scaling. • Analyze CMOS based logic circuit • Realize logic circuits with different design styles

			<ul style="list-style-type: none"> • Understand Front & Back end design aspects of simple VLSI Digital circuits
PHY204(c)	Material Science For Industrial Applications	2021	<ul style="list-style-type: none"> • Understand various experimental techniques for describing interaction of organic materials • Use error analysis for experimental data. • Knowledge about the different types of the Liquid crystals • Apply the knowledge of phase transformations for various applications
PHY301	Introductory Quantum Mechanics	2021	<ul style="list-style-type: none"> • Understand the need for quantum mechanical formalism and its basic principles. • Appreciate the importance and implication of vector spaces, Dirac Ket Bra notations, eigen value problem. • Understand the need of approximate methods in solving problems • Understanding scattering theory and its importance.
PHY302	Physics of Semiconductor Devices	2021	<ul style="list-style-type: none"> • Understand various experimental techniques for semiconductor or junctions and interfaces • Use I-V characteristics to understand the function of devices • Apply the knowledge of Junction transistors for various applications • <i>To get familiarization with Power Devices and Semiconductor Technology</i>
PHY303(a)	.Applied Spectroscopy	2021	<ul style="list-style-type: none"> • Understand the rotational and vibrational spectra of dimolecules and their applications in structure determinations. • Know the Raman effect and its use in the structural analysis of various molecules. • Have the knowledge about various spectrophotometer and the functioning of various parts in SPECTROPHOTOMETER. • Understand the basic concepts of fluorescence and phosphorescence their applications in different fields

PHY303(b)	Condensed Matter Physics	2021	<ul style="list-style-type: none"> • They gain knowledge on elastic properties of solids and its importance. • Differentiate they gain knowledge on specific heat and Thermal importance. • Understand the importance of Fermisurface in electrical properties of Solids. • Gain knowledge on photoconductivity and its origin
PHY303(c)	3.Embedded Systems	2021	<ul style="list-style-type: none"> • understand about the basic functions and structure of embedded systems • Get familiarized with Embedded system Design Tools and Hardware • understand about the basic programming concepts of embedded systems • know about the applications of PIC microcontrollers
PHY305	Advances in Physics	2021	<ul style="list-style-type: none"> • Understand the concepts of nanotechnology • Physical and chemical techniques of nanomaterial synthesis • Concepts of Nano materials and Nano devices • Basics of remote sensing and understanding the concepts of Geographical Information system
PHY306(a)	Basic Spectroscopic Techniques	2021	<ul style="list-style-type: none"> • HavethebasicknowledgeofBohr's-SommerfieldQuantumtheoryofhydrogenlikeatom • Understandclassical/quantumdescriptionofelectronicsspectraofatomandmolecules • UsemicrowaveandRaman Spectroscopyforanalysis ofknown molecules • Correlateinfraredspectroscopicinformationofknownmoleculeswith heirphysicaldescription
PHY306(b)	Nanomaterials and Devices	2021	<ul style="list-style-type: none"> • Understanding the basics of nanomaterials • Acquireknowledgeofbasicapproachesto synthesize thenanaomaterials

			<ul style="list-style-type: none"> • Understand the physical and chemical properties of carbon nano tubes and nano structured materials. • Introduction to nanodevices
PHY401	Advanced Quantum Mechanics	2021	<ul style="list-style-type: none"> • Understand the concept of identifiable particles • Understand the Orbital Angular momentum spin angular momentum and general angular momentum and their importance in spectroscopy • Apply the symmetries principles in calculating the conserved currents and charges.
PHY402	Physics of Advanced Materials	2021	<ul style="list-style-type: none"> • Gain in-depth knowledge about the formation of various crystal • Growth techniques • Understand the properties dielectric and ferroelectric materials • Understand different on Ferro and Anti ferro and ferro magnetism and their applications • Study functional materials
PHY403(a)	Photonics		<ul style="list-style-type: none"> • In depth knowledge on different lasers and their application • Importance of Fiber optics and their components in communication and sensors • Significance and role of waveguides and optics in integrated optics • Advances in photonic crystals, circuits and applications with respect to conventional devices.
PHY403(b)	Solar Energy-Thermal and Photovoltaic Properties	2021	<ul style="list-style-type: none"> • Understand the thermal and light components of solar energy, basic concepts and measurement of solar radiation. • Learn the theoretical aspects of solar collectors, performance evaluation and application. • Know the concepts of solar cells, types and fabrication procedures of source solar cells. • Provide knowledge on cell efficiency measurements.

PHY403(c)	Vacuum and Thin Film Technology	2021	<ul style="list-style-type: none"> • Basic theoretical concepts of the kinetic theory of gases applicable to vacuum technology and also the principles and construction of various vacuum pumps and gages. • Design and construction of various techniques for the preparation of thin films • Theoretical aspects to understand the growth and properties of thin films • Various industrial applications of thin films
PHY405	Advanced Characterization Techniques	2021	<ul style="list-style-type: none"> • Describe various Instrumentation – Essential parts of spectrophotometer. • Understand theoretical techniques Resonance Spectrometers and Mass Spectrometer • Understand use of various spectroscopic techniques and their application to the various fields of physics. • Understand the Advanced Spectroscopic and Microscopic Techniques
PHY406(a)	Wireless Communications	2021	<ul style="list-style-type: none"> • understand the basics of digital modulation techniques • Understand various coding and error correction techniques • Know GSM mobile communication standards, its architecture, logical channels, advantages and limitations. • Familiarize with optical and satellite communication techniques
PHY406(b)	Vacuum Technology & Applications	2021	<ul style="list-style-type: none"> • Basic theoretical concepts of the kinetic theory of gases applicable to vacuum technology and also the principles and construction of various vacuum pumps and gages for the production and measurement of vacuum • Design and construction of various components for the construction of vacuum systems for the preparation of thin films • Various techniques used for the growth of thin films • Various industrial applications of vacuum technology and thin films

Instrumentation

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
INS –101	1.Introduction to Instrumentation and Control System	2021	<ul style="list-style-type: none"> • Understand fundamentals of Instrumentation system • Understand and design open loop and closed loop control system • Understand time response analysis • Design and Analysis of Root Locus ,Frequency Response Systems
INS – 102	2. Analog Devices and Industrial Electronics	2021	<ul style="list-style-type: none"> • Understand and describe specifications, features and capabilities of electronic devices. • Understand the basics of operational amplifiers and their applications • Understand fundamental of semiconductors and power devices • Select appropriate device for circuit operation.
INS - 103(a)	1. Digital Techniques and Principles of Communications	2021	<ul style="list-style-type: none"> • Learn working and applications of FET and MOSFET. • Learn the basics of op-amps. • Learn the importance of digital electronics. • Learn the process of communication and its importance.
INS - 103(b)	2. Power Electronics	2021	<ul style="list-style-type: none"> • Students will be able to understand the working of FET, JFET, MOSFET. • Understand working of Controlled Rectifiers, Inverters and DC to DC converters. • Understand the inverters • Understand the Working of AC/DC Drives.
INS - 103(c)	3.Industrial Product Instrumentation	2021	Design the instruments Learn the hardware design Learn the digital design Learn the PCB design
INS - 104(a)	1. Programming in “C”	2021	<ul style="list-style-type: none"> • Understand thebasic principles of C language.

			<ul style="list-style-type: none"> • Understand To teach basic Programs in C Language. • Understand the simple Array Programs in C Language. • Understand the File management and Linked List Programs.
INS - 104(b)	2. Renewable Sources of Energy	2021	<ul style="list-style-type: none"> • Understand about different energy sources • Learn the importance of Solar energy • Learn the usage of wind energy • Learn the importance of bio-mass energy
INS -104(c)	3.Opto Electronics	2021	<ul style="list-style-type: none"> • Learn fundamentals of laser and their applications • Know the different optical sources and detectors • Understand the oprtical components and instruments • Learn the basics of optical fibres and its applications
INS – 201	1.Industrial Instrumentation	2021	<ul style="list-style-type: none"> • learnthe introduction in Process Instrumentation . • learnTo teach the Instrumentation in Iron and Steel Industries. • learn the Instrumentation in Petrochemical. • know the Instrumentation in Pharmacy and Thermal Power Stations.
INS – 202	2. Electronic Instrumentation	2021	<ul style="list-style-type: none"> • Learn about analogue Measuring Instruments • Learn Principle, operation and construction and details of analog and digital measuring instrumentation. • analyze and design function generator, square wave generator and digital multi meter. • Learn Spectrum Analyzers, Frequency Synthesizers, Digital tachometer, Digital watt meter Digital Capacitance meter
INS -203(a)	1. Sensors and Signal Conditioners	2021	<ul style="list-style-type: none"> • Understand fundamentals of sensor/Transducers • Understand the concept of Signal Conditioners. • Understand the concepts Temperature transducer , flow transducer and level sensors • Learn Pressure Transducers, Manometers and Elastic transducers

INS -203(b)	2.Network Analysis	2021	<ul style="list-style-type: none"> • Under stand different Network theorems • Lear the use of Laplace Transform in the Network Analysis • Under stand the concept of complex frequency • Learn the concepts in Resonance in series and parallel circuits
INS -203(c)	3. Spectroscopic Instrumentation	2021	<ul style="list-style-type: none"> • Understand the basics of Molecular Spectroscopy • Understand the basics of RAMAN Spectroscopy • Understand the basics of Spectrophotometry • Understand the basics of Fluorescence and Phosphorescence Spectroscopy
INS -204(a)	1.Microprocessors and Interfacing	2021	<ul style="list-style-type: none"> • learn assembly programming language • demonstrate the knowledge of addressing modes, instruction sets. • able to analyze and design assembly level programmes and timing diagrams. • able to analyze programmable peripheral devices, 8255, 8257/8237, 8259.
INS -204(b)	2. Robotics	2021	<ul style="list-style-type: none"> • To develop the student's knowledge in various robot structures and their workspace. • To develop student's skills in performing spatial transformations associated with rigid body motions. • To develop student's skills in perform kinematics analysis of robot systems. • To provide the student with knowledge of the singularity issues associated with the operation
INS -204(c)	3. Electronic Measurement Instruments	2021	<ul style="list-style-type: none"> • Learn the static and Dynamic characteristics of instruments, • Learn the signal Converters: I To P / P To I Converter • Understand the electronic Instruments for Measuring Basic Parameters • Understand the Instrument for Generation and Analysis of Waveforms
INS – 301	1.Analytical Instrumentation	2021	<ul style="list-style-type: none"> • The Students get will be versed with the principles, construction and

			<p>working of various analytical instruments..</p> <ul style="list-style-type: none"> • Students get details information about the applications of analytical techniques in medicine, industry etc. • Understand the Polarographs • Understand the NMR and ESR Spectrometers
INS – 302	2.Digital Signal Processing	2021	<ul style="list-style-type: none"> • Gain knowledge on the basic elements of Digital Signal Processing • Learn the analysis of discrete-time systems • Understand the discrete Fourier Transform • Learn design of digital IIR filters:
INS -303(a)	1. Biomedical Instrumentation	2021	<ul style="list-style-type: none"> • Identify various Bio-potential and their specification in terms of amplitude and frequency. • Decide the applications of therapeutic instruments for treatment purpose. • Decide the applications of therapeutic instruments for treatment purpose. • Understand applications of imaging instruments and the modalities involved in each technique.
INS - 303(b)	2. Micro Electro Mechanical Systems	2021	<ul style="list-style-type: none"> • Basic structure of MEMS and design • Learn Scaling laws in miniaturization • Analyze applications of MEMS and their importance as sensors • Understand the Microsystem Design and its considerations
INS - 303(c)	3.Instrumentation for Environmental Science	2021	<ul style="list-style-type: none"> • Learn necessity of instrumentation & control for environment • Gain knowledge in Ground water monitoring and waste water monitoring • Learn the effects of air pollution • Understand air monitoring. Flow monitoring and Rain water harvesting

INS – 304	Analytical Instrumentation Lab	2021	<ul style="list-style-type: none"> • .Understand the fundamentals of microcontroller. • Understand . addressing modes, Instructions and programming in 8051 • Understand 8051 Memory and I/O device Interfacing. Interrupts and Timer/counters • Learn8051 Memory and I/O device Interfacing
INS – 305	Microcontrollers and Interfacing	2021	<ul style="list-style-type: none"> • Understand internal block diagram of computer • know the Micro Programmed Control and organization of computer • Know The Memory System and Input-Output Organization • Know thePipeline And Vector Processing
INS -306(b)	1. Industrial Organization and Management	2021	<ul style="list-style-type: none"> • Learn the basics Industrial Management and Business organization • Learn the Quality, Inspection and Environment Management • Learn the Production Planning, Inventory Control and Supply Chain Management • Learn the Human Resources Management
INS - 401	1.Introduction to VLSI Circuits	2021	<ul style="list-style-type: none"> • Understand the fundamentals of VLSI systems • Learnthe physical Structure and Fabrication of CMOS ICs. • Understand the elements of Physical Design and Electrical Characteristics of MOSFETs • Understand the electronic analysis of CMOS logic gates
INS – 402	2.Embedded Systems and Real time Operating Systems	2021	<ul style="list-style-type: none"> • Learn the basics of o embedded systems and pic microcontroller • Understand the concepts of ARM processors and architecture of ARM 7 • Learn the real time operating systems and concepts • Understand the RTOS application domains
INS - 403(a)	1. Programmable Logic Controllers	2021	<ul style="list-style-type: none"> • Learn Process Dynamics and Process Control Action • Learn Process Controllers and Tuning • Learn Analysis of Control Loop

			<ul style="list-style-type: none"> • Learn Multivariable Control and Intelligent Controllers
INS - 403(b)	2. Computational Mathematics	2021	<ul style="list-style-type: none"> • Learn the basics of Special Functions and their importance in different fields • Learn the fundamentals of Integral Transforms and its applications in communications • Understand the different numerical techniques and their applications • Understand the complex Variables and their importance
INS - 403(c)	3. Electrical Engineering Materials	2021	<ul style="list-style-type: none"> • Learn the concepts of bonding and different crystal systems • Understand the concepts different polarizations and importance of dielectrics • Learn the basics of semiconductors and their importance in devices • Learn the basics of shape memory alloys and its importance
INS – 405	Project Work	2021	<ul style="list-style-type: none"> • Get the experience of working on a problem independently with planning and execution. • Develop skills related to presentation of data, analysis discussion of the results and draw conclusions • Learn the importance of research for development and self sustaining • Understand the need of the society
INS - 406(a)	1. Agro Based Instrumentation	2021	<ul style="list-style-type: none"> • Understand the Properties of Soil. • Understand the concept of flow diagram of Sugar Plant. • Understand the role of Irrigation System . • Understand the working of SCADA and DMA in agriculture.
INS - 406(b)	2. Industrial Automation	2021	<ul style="list-style-type: none"> • Define automation, it's importance, expectations from automation and applications in industry. • Understand the working of these systems and should be able to determine hardware and software requirements of SIS and SIL. • Understand evolution and architecture of DCS, hierarchical control in DCS, programming DCS • Understand the fundamentals of Open loop and Closed

			loop controls
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Electronics

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
ELE-101	Analog Integrated Circuits and Applications	2021	<ul style="list-style-type: none"> ➤ Understand the necessity of Action, Voltage regulators and Signal generators. ➤ Used Nonlinear Circuits, Amplifiers, and Phase-Locked Loops in various applications. ➤ Describe the A-D and D-A Converters in different applications. ➤ Apply essential features of Op. Amp. Applications used in the Industry.
ELE-102	Digital Integrated Circuits and Applications	2021	<ul style="list-style-type: none"> ➤ Gain in-depth knowledge about the Flip-Flops, Counters and Registers and their symbols used in digital integrated circuits and their function. ➤ Differentiate various IC Logic families used in Digital circuits. ➤ Understand the various semiconductor memories such as RAMs and ROMs, Programmable Logic devices and development software. ➤ To explain the basic function of various digital instruments such as DVMs, MP based Ramp type DVM, Digital multimeters, Frequency meter, Phase meter, capacitance meter and their Automation.
ELE-103 (a)	Programming in C with data structures	2021	<ul style="list-style-type: none"> ➤ Understand the fundamentals of C Language such as Expressions and I/O Statements, Operators and control statements. ➤ Explain the arrays, User Define Functions, Pointers and their applications ➤ Understand about Declaration of structure, Stack and Recursion and their applications. ➤ Understand the Linked Lists, Trees, different Algorithms, and their Applications. They are able to write the programs in controlling devices.

ELE-103 (b)	Python Programming	2021	<ul style="list-style-type: none"> ➤ Understand the basics of Dynamic Types, Conventions, String Operations, Operators, Loop, Lists and functions. ➤ Learn about Object and Classes in Python and compare with any other high-level language. ➤ Use Functions and Modules in solving various problems. ➤ Understand I/O and Error Handling in Python, solve the problems.
ELE-103 (c)	Programming in Matlab	2021	<ul style="list-style-type: none"> ➤ Apply basic knowledge of various instructions in Matlab and script files. ➤ Study and understanding of various control flow instructions. ➤ Study and understanding of various Structured Data Types ➤ Analyze the outcome of the Plotting in Matlab, Handle Graphics for Manipulating Plots, Writing the programs in solving the problems for various applications.
ELE-104 (a)	Mathematical Methods of Signal & System analysis	2021	<ul style="list-style-type: none"> ➤ Have the basic knowledge of different Continuous-Time and Discrete-Time Signals and systems and their properties. ➤ Understand the <i>Fourier Series Representation of Periodic Signals</i> and their properties. ➤ Know the Properties, Analysis and Characterization of LTI systems using the Laplace transforms. ➤ Study the Properties of the Z- Transform, Analysis and Characterization of LTI systems using the z-transforms.
ELE-104 (b)	Optical Communications	2021	<ul style="list-style-type: none"> ➤ Understand optical fibers and waveguides used in communication system ➤ Understand Attenuation and wave propagation in Optical Fibers. ➤ Study different types sources and detectors used in Optical Communication system. ➤ Differentiate losses in optical fiber link and state transmission characteristics of optical fiber
ELE-104 (c)	Wireless communications	2021	<ul style="list-style-type: none"> ➤ Understand the basics of digital modulation techniques ➤ Understand various coding and error correction techniques ➤ Know GSM mobile communication standards, its architecture, logical

			<p>channels, advantages and limitations.</p> <ul style="list-style-type: none"> ➤ Familiarize with optical and satellite communication techniques
ELEP-105	Analog and Digital IC's (Lab)	2021	
ELEP-106	Programming in C (Lab)	2021	
ELE-201	Advanced Microprocessors and Microcomputers	2021	<ul style="list-style-type: none"> ➤ Understanding of microprocessor architecture and evaluation ➤ Develop skill of writing programs in ALP for various applications of 8086 Microprocessor ➤ Interface various peripherals with 8086. ➤ Understanding interrupts and direct memory access
ELE-202	Digital Communications	2021	<ul style="list-style-type: none"> ➤ Understand the electro statistics and magneto statistics and also the properties of propagation of electromagnetic radiation in different media ➤ Know about the properties of laser beam and the working of different lasers and applications ➤ Describe the fourier analysis in optics problems and to understand the concept of holography ➤ Analyze the propagation of light in optical fibers and to know the various applications of optical fibers
ELE-203(a)	Semiconductor Materials and Devices	2021	<ul style="list-style-type: none"> ➤ Understand various experimental techniques for semiconductor or junctions and interfaces, I-V characteristics to understand the function of devices. ➤ To understand the function of Solid State Microwave devices. ➤ To understand the various Power semiconductor devices and their applications ➤ To get familiarization with Optoelectronic Devices and their properties.
ELE-203(b)	Sensors and Transducers	2021	<ul style="list-style-type: none"> ➤ Apply basics knowledge of sensors and transducers in understanding the measurement systems. ➤ Study and understanding of various types of Displacement and Strain Transducers ➤ Study and understanding of various types of Pressure transducers ➤ Study and understanding of Opto -Electronic Transducers
ELE-203(c)	Atmospheric and Space	2021	<ul style="list-style-type: none"> ➤ Understanding of Dynamics atmospheric structure

	Instrumentation Techniques		<ul style="list-style-type: none"> ➤ Understand the various elements in the atmosphere. ➤ Understanding of various Ground Based Instruments for the Measurement of atmospheric elements. ➤ Enrich the measurement techniques such as Radars.
ELE-204 (a)	Control Systems	2021	<ul style="list-style-type: none"> ➤ Understand the basics and applications of open loop and closed loop , Mathematical modelling of dynamic systems. ➤ Know the <i>Transient and steady-state response analysis</i> in control systems. ➤ Understanding of Root Locus analysis. ➤ Design the control systems using frequency response.
ELE-204 (b)	Medical Instrumentation	2021	<ul style="list-style-type: none"> ➤ Understanding of Bio-signal analysis and recording. ➤ Understanding of Physiological Assist Devices such as Pacemakers, Defibrillators, Nerve and Muscle Stimulators, Heart Lung Machine, Kidney Machine and Special Equipment. ➤ Use of Biotelemetry and Operation Theatre Equipment ➤ Understanding of safety and Advanced Biomedical Instrumentation techniques.
ELE-204 (c)	Data Mining and Information Security	2021	<ul style="list-style-type: none"> ➤ Understand Data warehousing components ➤ Understanding of Data mining metrics, data mining tasks, and exploratory Data Analysis. ➤ Knowledge about the Security Trends and different algorithms. ➤ Apply the knowledge of Cryptography techniques for Digital Signatures and Authentication Protocols.
ELE-301	Digital Signal Processing	2021	<ul style="list-style-type: none"> ➤ Understand the need for Sampling of Continuous-Time signals and its basic principles. ➤ Understand the need of Structures for Discrete-time systems ➤ Understand the need of Discrete Fourier Transform methods in solving problem ➤ Understanding the Architecture of TMS320C5X processor, assembly language instructions and its importance.
ELE-302	Digital system Design-VHDL	2021	<ul style="list-style-type: none"> ➤ Understand various Basic Language Elements and model analysis.

			<ul style="list-style-type: none"> ➤ Understand Data flow and structural modeling. ➤ Apply the knowledge Subprograms, Overloading, Packages and Libraries for various applications ➤ To get familiarization with Advanced features for Model simulation
ELE-303(a)	Microcontrollers and Applications	2021	<ul style="list-style-type: none"> ➤ Understand about the basic functions and structure of Microcontrollers such as 8051. ➤ Get familiarized with 8051 controllers ➤ understand about the basic Atmel microcontrollers and programming ➤ Understanding of PIC 16F8XX flash microcontrollers and their interfacing with I/O devices for industrial applications
ELE-303(b)	Computer organization	2021	<ul style="list-style-type: none"> ➤ Understand basics of structures of Computers. ➤ Know Register Transfer language and micro operations ➤ Understand Microprogrammed control, Computer Arithmetic and Memory system. ➤ Input-Output Organization, Pipeline and Vector Processing.
ELE-303(c)	Digital Image Processing	2021	<ul style="list-style-type: none"> ➤ understand about the Fundamentals of Image Processing ➤ Get familiarized with Image enhancement. ➤ Understand about the Image Segmentation and Feature Analysis. ➤ Understand about the Multi Resolution Analysis and Compressions.
ELE-305	Peripheral interface controllers VHDL & Microcontrollers (Lab) (Hands on training)	2021	<ul style="list-style-type: none"> ➤ understand about the basics of Assembler and Assembler Programs ➤ Get familiarized with PIC microcontrollers and interfacing I/O devices.
ELE-306 (a)	Microprocessors, PC Hardware and Interfacing	2021	<ul style="list-style-type: none"> ➤ Have the basic knowledge of 8086 Based system design and peripheral interfaces ➤ Understand the Motherboard of IBM PC ➤ Understand with Peripherals ➤ Understand about I/O Serial and Parallel ports.
ELE-306 (b)	Satellite Communications	2021	<ul style="list-style-type: none"> ➤ Understanding the basics of Satellite Communication ➤ Acquire knowledge of Multiple Access Techniques ➤ Understand the Satellite Orbits and Inclination. ➤ Understanding of Satellite systems, Indian satellites and applications
ELE-401	Advanced Communication Systems	2021	<ul style="list-style-type: none"> ➤ Understand the Cellular concept. ➤ Understand the Mobile Radio propagation and channel

			<p>coding</p> <ul style="list-style-type: none"> ➤ Understand the Multiple Radio Access, Multiple Division Techniques, Channel Allocation. ➤ Know the Optical, Satellite communications and their applications.
ELE-402	Introduction to VLSI circuits	2021	<ul style="list-style-type: none"> ➤ Demonstrate a clear understanding of CMOS fabrication flow and technology scaling. ➤ Analyze CMOS based logic circuit ➤ Realize logic circuits with different design styles ➤ Analysis of CMOS Logic Circuits and Designing High-speed CMOS Logic Networks.
ELE-403(a)	Data Communications and Networking	2021	<ul style="list-style-type: none"> ➤ Understand the basic concepts networks and Transmission of digital data. ➤ Know the different types of Multiplexing and Data link protocols. ➤ Understand the various types of local area networks. ➤ Understand the ISDN, ATM, SONET and related frames and protocols.
ELE-403(b)	Industrial Electronics	2021	<ul style="list-style-type: none"> ➤ Understand the Solid State Devices Used in Industrial Logic Circuits. ➤ Know the use of Solid state Devices in Power electronics. ➤ Understand input and output devices such as sensors and drives. ➤ Know the Types of robots and their function in the Industry.
ELE-403 (c)	EMI and EMC	2021	<ul style="list-style-type: none"> ➤ Understanding of EMI Environment. ➤ Know the Specifications, Standards, Limits of EMI. ➤ Know the Grounding principles and Bonding guidelines. ➤ Understanding the theory of Shielding, Need of Gaskets and their properties, Basic Filter Component Characteristics and guidelines.
ELE-406 (a)	Embedded systems with PIC Microcontrollers	2021	<ul style="list-style-type: none"> ➤ Understanding of the basics and Characteristics of IoT, IoT development boards. ➤ Know the Wireless Technologies. ➤ Know the data handling and analysis of the data. ➤ The use of IoT for Automation, Management, Logistics, Agriculture, Health and Lifestyle, Industry.

ELE-406 (b)	Microwaves	2021	<ul style="list-style-type: none"> ➤ Understanding of Electromagnetic Theory ➤ Understanding of Transmission line theory ➤ Know different types of Waveguides. ➤ Use of various types of antennas.
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41. Psychology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
PSY 101	General Psychology-I (CC)	2021	<ol style="list-style-type: none"> 1. Understood the concepts and scope of psychology 2. Comprehended the biological basis of behavior 3. Studied the perception and sensation 4. Understood the concepts and learning theories
PSY 102	Social Psychology (CC)	2021	<ol style="list-style-type: none"> 1. Understood the concepts of social psychology 2. Comprehended the social perception and cognition. 3. Studied the Socialization 4. Understood the meaning and theories attitudes
PSY 103A	a. Psychopathology-I (CF)	2021	<ol style="list-style-type: none"> 1. Understood the meaning abnormal behavior and historical and current trends 2. Comprehended the models of abnormal behaviour and approaches to therapies 3. Learned about classification and assessment of abnormal behaviour 4. Able to evaluate different approaches to therapies for abnormal behaviour
PSY 103B	b. Psychological Measurement-I(CF)	2021	<ol style="list-style-type: none"> 1. Understood the assessment and psychological measurements 2. Comprehended the development of psychological tests and principles of test construction. 3. Learned the Principles of Test Construction 4. Understood the test Development and test Standardization Procedures

PSY 103C	c. Positive Psychology (CF)	2021	<ol style="list-style-type: none"> 1. Understood the human strength of positive psychology 2. Acquainted students with positive subjective states and processes 3. Enabled students to appreciate importance of positive Individual Traits 4. Understood the Positive behaviour in Institutions
PSY 104A	a. Child Development Psychology	2021	<ol style="list-style-type: none"> 1. Exposed the students to the basics of Child Development 2. Helped the student understand research in child development 3. Understood the biological development of a child 4. Able to evaluated personality development of a child
PSY 104B	b. Psychological Measurement & Statistics	2021	<ol style="list-style-type: none"> 1. The students acquainted with intelligence and achievement tests 2. The students learned the measurement of personality tests 3. They are clear in understanding the Statistics for Psychological Measurement 4. They have knowledge on Distribution of Scores on Variables.
PSY 104C	c. Forensic Psychology	2021	<ol style="list-style-type: none"> 1. Exposed the student to the basics of forensic Psychology 2. Students understood the concept of psychology of Crime 3. They acquainted knowledge on psychological investigation of Crime 4. Students understood psychology of violence of various forms.
PSY 201	General Psychology -II (CC)	2021	<ol style="list-style-type: none"> 1. The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting 3. Comprehended the thinking and intelligence 4. Able to evaluated the personality of individuals
PSY 202	Applied Social Psychology-(CC)	2021	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and individuals.
PSY 203A	a. Psychopathology-II(CF)	2021	<ol style="list-style-type: none"> 1. Understood anxiety and mood disorders

			<ol style="list-style-type: none"> 2. Acquainted with somatic disorders. 3. Studied Psychosis and Cognitive Disorders 4. Understood Psychological Disorders Across the Life Span
PSY 203B	b. Psycho-Diagnosis (CF)	2021	<ol style="list-style-type: none"> 1. Acquired the knowledge of psychological tests and their use in diagnosis. 2. Students are able to diagnose patients with the help of projective tests. 3. Understood of different diagnostic systems. 4. Learned how to take case history of patients and to make differential diagnosis
PSY 203C	c. Computer Application in Psychological Research-(CF)	2021	<ol style="list-style-type: none"> 1. Understood the basic components of computer 2. Acquainted with Ms Office, power point and internet services. 3. Comprehended the application of computer knowledge through creating emails, scientific journals and data scoring 4. Able to understand Statistical Packages and its application
PSY 204A	a. Life Span Development Psychology : Infancy to Adolescence (Prenatal to Adolescents)	2021	<ol style="list-style-type: none"> 1. To understand human development 2. The students became aware of infancy and babyhood 3. To comprehend the Early and Late Childhood and Adolescence. 4. The students are aware of the development of Adolescence
PSY 204B	b. Consumer Behavior	2021	<ol style="list-style-type: none"> 1. The students understood the concept of consumer behaviour and market research 2. Comprehended the economic theory of buyer behaviour 3. Studied the effect of psychological theories of motives 4. Acquainted with the advertisement - advertisement purposes-role of communication
PSY 204C	c. Industrial &	2021	<ol style="list-style-type: none"> 1. Understood the psychological, social and economic

	Organizational Psychology		<ul style="list-style-type: none"> contribution in developing industrial psychology. 2. Comprehended the personal psychology 3. Have knowledge the selection, interviews and evaluation. 4. Comprehended the employment interview
PSY 301	Counseling Psychology (CC)	2021	<ul style="list-style-type: none"> 1. Understood the meaning of counseling and ethics in counseling 2. Comprehended the process of counseling and techniques 3. Understood the counseling process 4. Acquainted with the counseling techniques
PSY 302	Psychology of Personality (CC)	2021	<ul style="list-style-type: none"> 1. Understood nature of personality. 2. Realized the determinants of personality 3. Found that the development of Personality. 4. Understood the Assessment of personality.
PSY 303A	a. Organizational Behavior & HRM (GE)	2021	<ul style="list-style-type: none"> a. The students understood organization and the Individual differences b. Comprehended the motivation and leadership c. They realized how to take decision making and organizational effectiveness. d. The students are aware of organizational change due to development
PSY 303B	b. Therapeutic Approaches in Counseling-I	2021	<ul style="list-style-type: none"> 1. enabled the student to have an insight into the psychoanalytic Approach in counseling 2. The student have understood the behaviour therapy 3. They become aware of the procedures involved in the person centered Approach in counseling. 4. Understood the concept and application of Existential Therapy
PSY 303C	c. Health Psychology(GE)	2021	<ul style="list-style-type: none"> 1. Understood the concept of the Health psychology 2. Acquainted with and health behaviour. 3. Comprehended the health behaviour enhancement and management

			4. Realized the future of the health psychology.
PSY 305	Stress Management Theory & Practical	2021	<ol style="list-style-type: none"> 1. To introduce meaning of stress and psychophysiology 2. To realize the illness/disease and intervention 3. To understand the techniques of stress management 4. To comprehend and implement the techniques of stress management and counseling
PSY 306	Personality Development (OE)	2021	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills 3. The students acquainted with soft skills 4. They learned more on Soft skills
PSY 401	Therapeutic Approaches in Counseling-II(CC)	2021	<ol style="list-style-type: none"> 1. To enable the student to have an insight into the Gestalt Therapy 2. To acquaint with the therapeutic Approach to the Reality Therapy 3. To enable the students to cognitive behaviour therapy 4. The students involved in the An Integrative Approach
PSY 402	Theories of Personality (CC)	2021	<ol style="list-style-type: none"> 1. Understood the Psychoanalytic Approach 2. Learned on behavioural approaches to personality. 3. The students comprehended the Humanistic approach 4. The students acquainted with the eastern theories of personality
PSY 403A	a. Research Methodology-(GE)	2021	<ol style="list-style-type: none"> 1. Understood basic research and applied research including experimental research. 2. The students comprehended the problem & hypothesis 3. Gained knowledge on Sampling & Data Collection 4. Understood the application of research designs
PSY 403B	b. Organizational Development (GE)	2021	<ol style="list-style-type: none"> 1. Learned the assessment, instructional objectives. 2. Applied the knowledge of training and development incorporating the findings of research 3. Studied the transfer and maintenance of training and alternative training media 4. Gained the evaluating training effectiveness
PSY 403C	c. Rehabilitation Psychology (GE)	2021	<ol style="list-style-type: none"> 1. The students understood historical development – Models of disabilities in the past and present scenario

			<ol style="list-style-type: none"> 2. The students comprehended Assessment of Disability, Psychological Aspects 3. The students are aware of Behavioral Management 4. They acquainted with Organizational services
PSY 406	Life Skills (OE)	2021	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills. 3. The students have learned more on Life Skills in Specific 4. They acquainted with Self management skills

Counselling Psychology

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
PSY 101	General Psychology-I (CC)	2021	<ol style="list-style-type: none"> 5. Understood the concepts and scope of psychology 6. Comprehended the biological basis of behavior 7. Studied the perception and sensation 8. Understood the concepts and learning theories
PSY 102	Social Psychology (CC)	2021	<ol style="list-style-type: none"> 5. Understood the concepts of social psychology 6. Comprehended the social perception and cognition. 7. Studied the Socialization 8. Understood the meaning and theories attitudes
PSY 103A	a. Psychopathology-I (CF)	2021	<ol style="list-style-type: none"> 5. Understood the meaning abnormal behavior and historical and current trends 6. Comprehended the models of abnormal behaviour and approaches to therapies 7. Learned about classification and assessment of abnormal behaviour

			8. Able to evaluate different approaches to therapies for abnormal behaviour
PSY 103B	b. Psychological Measurement-I(CF)	2021	<ol style="list-style-type: none"> 5. Understood the assessment and psychological measurements 6. Comprehended the development of psychological tests and principles of test construction. 7. Learned the Principles of Test Construction 8. Understood the test Development and test Standardization Procedures
PSY 103C	c. Positive Psychology (CF)	2021	<ol style="list-style-type: none"> 1. Understood the human strength of positive psychology 2. Acquainted students with positive subjective states and processes 3. Enabled students to appreciate importance of positive Individual Traits 4. Understood the Positive behaviour in Institutions
PSY 104A	a. Child Development Psychology	2021	<ol style="list-style-type: none"> 5. Exposed the students to the basics of Child Development 6. Helped the student understand research in child development 7. Understood the biological development of a child 8. Able to evaluated personality development of a child
PSY 104B	b. Psychological Measurement & Statistics	2021	<ol style="list-style-type: none"> 5. The students acquainted with intelligence and achievement tests 6. The students learned the measurement of personality tests 7. They are clear in understanding the Statistics for Psychological Measurement 8. They have knowledge on Distribution of Scores on Variables.
PSY 104C	c. Forensic Psychology	2021	<ol style="list-style-type: none"> 5. Exposed the student to the basics of forensic Psychology 6. Students understood the concept of psychology of Crime 7. They acquainted knowledge on psychological investigation of Crime 8. Students understood psychology of violence of various forms.
PSY 201	General Psychology -II (CC)	2021	<ol style="list-style-type: none"> 1. The students understood the fundamentals of motivation and emotion 2. They understood the basic concepts of memory and forgetting

			<ol style="list-style-type: none"> 3. Comprehended the thinking and intelligence 4. Able to evaluated the personality of individuals
PSY 202	Applied Social Psychology-(CC)	2021	<ol style="list-style-type: none"> 1. Students understood about Social Influence 2. Acquainted with social exchange process in social behaviour. 3. Comprehended the prejudice and discrimination 4. To understand what is psychological groups and individuals.
PSY 203A	a. Psychopathology-II(CF)	2021	<ol style="list-style-type: none"> 1. Understood anxiety and mood disorders 2. Acquainted with somatic disorders. 3. Studied Psychosis and Cognitive Disorders 4. Understood Psychological Disorders Across the Life Span
PSY 203B	b. Psycho-Diagnosis (CF)	2021	<ol style="list-style-type: none"> 1. Acquired the knowledge of psychological tests and their use in diagnosis. 2. Students are able to diagnose patients with the help of projective tests. 3. Understood of different diagnostic systems. 4. Learned how to take case history of patients and to make differential diagnosis
PSY 203C	c. Computer Application in Psychological Research-(CF)	2021	<ol style="list-style-type: none"> 1. Understood the basic components of computer 2. Acquainted with Ms Office, power point and internet services. 3. Comprehended the application of computer knowledge through creating emails, scientific journals and data scoring 4. Able to understand Statistical Packages and its application
PSY 204A	a. Life Span Development Psychology : Infancy to Adolescence (Prenatal to Adolescents)	2021	<ol style="list-style-type: none"> 1. To understood human development 2. The students became aware of infancy and babyhood 3. To comprehended the Early and Late Childhood and Adolescence. 4. The students are aware of the development of Adolescence

PSY 204B	b. Consumer Behavior	2021	<ol style="list-style-type: none"> 1. The students understood the concept of consumer behaviour and market research 2. Comprehended the economic theory of buyer behaviour 3. Studied the effect of psychological theories of motives 4. Acquainted with the advertisement - advertisement purposes- role of communication
PSY 204C	c. Industrial & Organizational Psychology	2021	<ol style="list-style-type: none"> 1. Understood the psychological, social and economic contribution in developing industrial psychology. 2. Comprehended the personal psychology 3. Have knowledge the selection, interviews and evaluation. 4. Comprehended the employment interview
CPSY 301	Counseling Process	2021	<ol style="list-style-type: none"> 1. Understood the counseling as helping profession 2. To acquire the relation with other helping professions 3. To know the legal and ethical issues 4. Developed the importance of verbal and non verbal skills in counseling sessions.
CPSY 302	Counseling Skills	2021	<ol style="list-style-type: none"> 1. Understood the micro-skills of counselling through a series of practices. 2. Got an idea about who to understand the people and interpret their feelings with positive appreciation 3. To provide a space where participants can grow, in the sense of allowing an encounter with them first and based on this encounter to achieve a better understanding of how they impact on other people. 4. The ability to examine and assess the clients with scientific manner.

CPSY 303A	a. Therapeutic Approaches in Counseling-I	2021	<ol style="list-style-type: none"> 1. Understood the various Therapeutic Approaches of counseling. 2. Understood the techniques relevant to therapies. 3. To acquires the basic procedures. 4. Learned how to touch in the insight of the client
CPSY 303B	b. Counseling in Organizational Settings	2021	<ol style="list-style-type: none"> 1. Understood the basic Principles of Organizational behaviour 2. Acquired the role of counselor at work place and identified the causes and problems in work environment 3. To adopted the leadership styles to lead the employees. 4. Enhanced the adjustment and commitment styles in work environment.
CPSY 303C	c. Health Psychology (GE)	2021	<ol style="list-style-type: none"> 1. Understood the concept of the Health psychology 2. Acquainted with and health behaviour. 3. Comprehended the health behaviour enhancement and management 4. Realized the future of the health psychology.
CPSY 305	Stress Management & Counseling Psychology Theory & Practical	2021	<ol style="list-style-type: none"> 1. Understood the stress and coping styles 2. Acquired the sources of stress 3. Learned the techniques of stress management 4. To comprehend the implementation of stress management and counseling techniques
CPSY 306	Personality Development	2021	<ol style="list-style-type: none"> 1. Studied biological, psychological determinants 2. The students aware of socio cultural determinants & Soft Skills 3. The students acquainted with soft skills 4. They learned more on Soft skills
CPSY 401	Applications of Counseling in Special Areas	2021	<ol style="list-style-type: none"> 1. Understood how to handle the client with various problems and hailing into different age groups.

			<ol style="list-style-type: none"> 2. Learned how to handle the clients with specific problems 3. To attained what is career, personal, vocational and other applied areas of counseling 4. Gained how to organize Counseling programs to handle special concerns in Different social settings.
CPSY 402	Therapeutic Approaches in Counseling-II(CC)	2021	<ol style="list-style-type: none"> 1. Understood the therapeutic approaches of counseling 2. Improve the major skills in therapeutic techniques 3. Gained specific methods involved in therapy 4. Adopted the different psycho therapeutic models of counseling.
CPSY 403A	a. Counseling in Hospital Settings	2021	<ol style="list-style-type: none"> 1. Understood the concepts of Health Psychology in clinical setup. 2. Acquired the causes of Illness and Psychological Factors 3. Got a clinical picture about the role and scope of a Counselor in Hospital Settings 4. Learned the importance of Verbal and Non-verbal Communication in Patient care
CPSY 403B	b. Counseling in Community Settings	2021	<ol style="list-style-type: none"> 1. Studied about the basics of Community Psychology 2. To comprehend the research methods to collect and analyze the data 3. Understood the role of supporting agencies to promote community guidance 4. Adopted different rehabilitation practices
CPSY 403C	c. Counseling the Family	2021	<ol style="list-style-type: none"> 1. Understand the need and importance of family counseling. 2. Improved how to handle the family issues 3. To maximized use of tools in counseling 4. Learned the specific skills to handle family issues.

CPSY 406	Life Skills (OE)	2021	<ol style="list-style-type: none"> 1. Learned the concept of life skills and its importance in relation to personality development of an individual. 2. They became aware of the components of life skills and the method of imparting knowledge of life skills. 3. The students have learned more on Life Skills in Specific 4. They acquainted with Self management skills
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42. Statistics

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
ST - 101	Linear Algebra	2021	<ol style="list-style-type: none"> 1. Students understood for estimation of elementary transformations in matrix and their solutions. 2. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 3. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 4. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases
ST - 102	Probability and Distributions	2021	<ol style="list-style-type: none"> 1. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 2. Students also know the weak law, strong law and central limit theorem and their importance 3. Students know about different continuous and discrete distributions and their properties. 4. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple correlation coefficients.
ST – 103A	a. Sampling Techniques	2021	<ol style="list-style-type: none"> 1. Students learnt different sampling techniques of with replacement/

			<p>without replacement and Different sampling models.</p> <ol style="list-style-type: none"> Students studied non-Sampling errors and different remedies. Implement Cluster sampling, Ratio and Regression estimation in real life problems Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's estimator for survey.
ST – 103B	b. Stochastic Process	2021	<ol style="list-style-type: none"> Students understoodstochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. Understand the consequences of the Intermediate value theorem for continuous function. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems.
ST – 104A	Statistical analysis using excel and SPSS	2021	<ol style="list-style-type: none"> Students can learn how to enter the data MS-Excel. Students can analyze the data in Excel and SPSS. Students can learn how to transfer the data in one data Analysis application to Another. Students can predict the future data using SPSS Procedures.
ST-104B	Python	2021	<ol style="list-style-type: none"> Students have done Python Programming and their Object and Classes. Students have understood I/O and Error Handling in Python. Students can understand the looping problems. Students can do basic EDA.
ST - 106	Practical-II (75 Practical + 25 Record)	2021	<ol style="list-style-type: none"> Numerical problems related to Probability and Distribution Theory, are solved by executing programs on computers. Calculate probabilities relevant to multivariate distributions, including marginal and conditional probabilities and the covariance of two random variables Perform inferential statistical analysis through SPSS. Compute descriptive statistics using SPSS.

ST - 201	Statistical Inference	2021	<ol style="list-style-type: none"> 1. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 2. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 3. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). 4. They can also calculate the problems related to point estimation and interval estimation.
ST - 202	Multivariate Analysis	2021	<ol style="list-style-type: none"> 1. Students learnt about importance of multivariate variables and their distributions 2. T^2, D^2, MANOVA models are understood and know it's importance. 3. Implement dimension reduction techniques using software on real life problems. 4. Classification analysis methods explained according to their classification algorithm.
ST - 203	(a) Linear Models and Applied Regression Analysis (b) Demography and Official Statistics	2021	<ol style="list-style-type: none"> 1. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 2. They know R^2, adjusted R^2 and C_p criteria for model selection. 3. They will get the knowledge of building and fitting linear regression models with software. 4. They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.
ST – 204 A	Design and Analysis of Experiments	2021	<ol style="list-style-type: none"> 1. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 2. Students understood about Latin squares and their construction, missing plot technique etc. 3. Students explained about Incomplete Block Designs and their analysis, etc. 4. Understand the basic terms used in design of experiments by using appropriate experimental methods.
ST - 301	Econometric Methods	2021	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation

			<p>and their estimation procedures.</p> <ol style="list-style-type: none"> 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications.
ST - 302	Operations Research-I	2021	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. 4. Students can take a decision in real life by Using the Game Theory Techniques.
ST - 303	Biostatistics	2021	<ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models. 3. Apply the concept of deterministic and stochastic models on simple and general epidemics. Understand linearization of dynamical systems with various dimensions
ST - 305	STATISTICAL ANALYSIS USING R	2021	<ol style="list-style-type: none"> 1. Students can manipulate the vectors, matrices, arrays, data frames and lists. 2. Students can work with the character data, factor data and dates. 3. Students get the results using data in R. 4. Students can work with different distributions and apply different tests for the data using R.
	Practical-VI (75 Practical +	2021	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views.

ST - 305 P	25 Record)		<ol style="list-style-type: none"> 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects
ST - 306 A	(a) Statistics for Biological and Earth Sciences	2021	<ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students used Advanced statistics tools with working illustrations.
ST - 306 B	(b) Statistics for Social and Behavioral Sciences	2021	<ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students understood about basic probability and important distributions with workout examples. 3. Students applied t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students used Advanced statistics tools with illustrations.
ST - 401	Time Series Analysis and Forecasting Methods	2021	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. Check and validate models with its residual analysis and diagnostic checking.
ST - 402	Operations Research-II	2021	<ol style="list-style-type: none"> 1. To perform Dynamic programming and their applications and computation procedure with illustration. 2. To discuss different Queuing models steady state solutions with examples. 3. To explain Inventory models with and without shortages, S-splicy, EOQ estimation with simple examples

			4. To understand Replacement problems such as block and age replacement problems, individual and group replacement policies with examples.
ST – 403A	Advanced Econometric models	2021	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed probit, logit models and their estimation. Students can understand the qualitative and limited dependent variable models.
ST-403B	Total Quality Management & Six sigma	2021	<ol style="list-style-type: none"> 1. Students learn the Quality management importance in real life. 2. Students directly know the organizing and planning for the Quality development. 3. Students can understand the process management and leadership to empower the teamwork. 4. Students know the tools of quality management and their usage
ST-404 P	Practicals-VII	2021	<ol style="list-style-type: none"> 1. Students solved Numerical problems related to semester –IV theory papers. 2. Students can understand how the statistics can play the role in the prediction of the future data. 3. Students can do the future predictions by using the existing data. 4. Students can do the research on the statistical data.
ST - 405	Student Project: Data Centre / Institutions / Companies and etc.,	2021	<ol style="list-style-type: none"> 1. Students collected data in different ways. 2. Students can prepare different questioner for collection of the data. 3. Students can learn data entry in particular software, analysis and interpretation. 4. Students learn and prepare the details reports on the projects.
ST - 406 A	(a) Business Analytics	2021	<ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students studied basic probability and important distributions with workout examples. 3. Students used t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples.

			4. Students performed advanced statistics tools for solving the problems.
ST-406B	(b) Survival Analysis	2021	<ol style="list-style-type: none"> 1. Students learnt about survival functions, their estimating methods, Distributions and their comparison for survival distributions. 2. Understand the elements of reliability, hazard function and its applications. 3. Understand the concept of censoring, life distributions and ageing classes. 4. Estimate nonparametric survival function of the data.

Applied Statistics

Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
APST - 101	Linear Algebra	2021	<ol style="list-style-type: none"> 5. Students understood for estimation of elementary transformations in matrix and their solutions. 6. Students learnt about characteristic roots and vectors with numerical examples. They also know theoretical proofs of theorems. 7. Discriminate between diagonalizable and non-diagonalizable matrices; orthogonally diagonalizable symmetric matrices and quadratic forms 8. Combine methods of matrix algebra to compose the change-of-basis matrix with respect to two bases of a vector space, identify linear transformations of finite dimensional vector spaces and compose their matrices in specific bases
APST - 102	Probability and Distributions	2021	<ol style="list-style-type: none"> 5. Students must have knowledge about random variables, expectations, sets and their properties and inequalities where ever necessary. 6. Students also know the weak law, strong law and central limit theorem and their importance 7. Students know about different continuous and discrete distributions and their properties. 8. They have awareness about central and non-central sampling distributions and order Statistics. Idea about simple, partial and multiple

			correlation coefficients.
APST – 103A	a. Sampling Techniques	2021	<ol style="list-style-type: none"> 5. Students learnt different sampling techniques of with replacement/ without replacement and Different sampling models. 6. Students studied non-Sampling errors and different remedies. 7. Implement Cluster sampling, Ratio and Regression estimation in real life problems 8. Apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method and Murthy's estimator for survey.
APST – 103B	b. Stochastic Process	2021	<ol style="list-style-type: none"> 5. Students understoodstochastic processes, Markov chains, Poisson process, Renewal theory, Branching process, etc. 6. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations. 7. Understand the consequences of the Intermediate value theorem for continuous function. 8. Know the chain rule and use it to find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems.
APST – 104A	Statistical analysis using excel and SPSS	2021	<ol style="list-style-type: none"> 5. Students can learn how to enter the data MS-Excel. 6. Students can analyze the data in Excel and SPSS. 7. Students can learn how to transfer the data in one data Analysis application to Another. 8. Students can predict the future data using SPSS Procedures.
APST-104B	Python	2021	<ol style="list-style-type: none"> 5. Students have done Python Programming and their Object and Classes. 6. Students have understood I/O and Error Handling in Python. 7. Students can understand the looping problems. 8. Students can do basic EDA.
APST - 106	Practical-II (75 Practical + 25 Record)	2021	<ol style="list-style-type: none"> 5. Numerical problems related to Probability and Distribution Theory, are solved by executing programs on computers. 6. Calculate probabilities relevant to multivariate distributions, including marginal and conditional probabilities and the covariance of two random variables

			<ul style="list-style-type: none"> 7. Perform inferential statistical analysis through SPSS. 8. Compute descriptive statistics using SPSS.
APST - 201	Statistical Inference	2021	<ul style="list-style-type: none"> 5. Students know about point estimation, non-parametric models, Game theory, theorems and Proofs where ever necessary. 6. They can understand the concept of random sample from a distribution, sampling distribution of statistic, standard error of important estimates such as mean and proportions. 7. Students may gain the knowledge of testing of hypotheses (both large sample test and small sample test). 8. They can also calculate the problems related to point estimation and interval estimation.
APST - 202	Multivariate Analysis	2021	<ul style="list-style-type: none"> 5. Students learnt about importance of multivariate variables and their distributions 6. T^2, D^2, MANOVA models are understood and know it's importance. 7. Implement dimension reduction techniques using software on real life problems. 8. Classification analysis methods explained according to their classification algorithm.
APST - 203	(a) Linear Models and Applied Regression Analysis (b) Demography and Official Statistics	2021	<ul style="list-style-type: none"> 5. Students learnt about different linear and non-linear regression models and their appropriate computational procedures. 6. They know R^2, adjusted R^2 and C_p criteria for model selection. 7. They will get the knowledge of building and fitting linear regression models with software. 8. They also learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.
APST – 204 A	Design and Analysis of Experiments	2021	<ul style="list-style-type: none"> 5. Students learnt ANOVA, ANCOVA technique for one way and two-way classifications. Multiple comparisons tests using Tukey's, Duncans, Sheffe's and Dunnet's tests. 6. Students understood about Latin squares and their construction, missing plot technique etc. 7. Students explained about Incomplete Block Designs and their analysis, etc. 8. Understand the basic terms used in design of experiments by using appropriate experimental methods.

APST - 301	Applied Econometrics	2021	<ol style="list-style-type: none"> 1. Students learnt heteroscedasticity, multicollinearity and autocorrelation and their estimation procedures. 2. Students understood about different lag models and simultaneous linear equations model with their estimation methods. 3. Explain core concepts and techniques in econometrics, with a special focus on the classical linear regression model. 4. Understand the assumptions upon which different econometric methods are based and their implications.
APST - 302	Applied Operations Research	2021	<ol style="list-style-type: none"> 1. Students understood about Dual primal, Revised simplex methods. 2. Students learnt non-linear programming, integer programming, CPM, PERT, different models of games. 3. Students can think the real-life problems in the way of Linear Programming Problems and try to solve the problems in Mathematical Way. Students can take a decision in real life by Using the Game Theory Techniques.
APST – 303	Practical- V (75 Practical +25 Record)	2021	<ol style="list-style-type: none"> 1. Students can understand the Statical Methos in Economical Views. 2. Students solved the Numerical problems related to operations research. 3. Students Understand the Life Tables in Demography. 4. Students can understand how the statistics use in biological aspects.
APST - 304	Advanced Bio-Statistics	2021	<ol style="list-style-type: none"> 1. Students learnt about biological assay, their distribution and theorems, dose response relationships, basic concepts of biological assay, estimation methods of gene frequencies, etc. 2. Describe single and multi-species population growth models. 3. Apply the concept of deterministic and stochastic models on simple and general epidemics. 4. Understand linearization of dynamical systems with various dimensions.
APST - 305	Practical-VI (75 Practical + 25 Record)	2021	<ol style="list-style-type: none"> 1. Students can manipulate the vectors, matrices, arrays, data frames and lists.

			<ol style="list-style-type: none"> 2. Students can work with the character data, factor data and dates. 3. Students get the results using data in R. 4. Students can work with different distributions and apply different tests for the data using R.
APST - 306	<p>(a) Statistics for Biological and Earth Sciences</p> <p>(b) Statistics for Social and Behavioral Sciences</p>	2021	<p>A. Statistics for Biological and Earth Sciences</p> <ol style="list-style-type: none"> 1. Students learnt about Graphs, measures of averages, measures of dispersion etc. 2. Students studied Basic probability and important distributions with workout examples. 3. Students performed t, F, χ^2, ANOVA and ANCOVA and non-parametric tests with examples. 4. Students studied Advanced statistics tools with illustrations. <p>B. Statistics for Social and Behavioral Sciences</p> <ol style="list-style-type: none"> 1. Students learnt Graphs, measures of averages, measures of dispersion etc. 2. Students understood about Basic probability and important distributions and studied with workout examples. 3. Students performed t, F, χ^2, ANOVA and ANCOVA and non-parametric tests and discussed with examples. 4. Students learnt about Advanced statistics tools with working illustration
APST - 401	Applied Forecasting Methods	2021	<ol style="list-style-type: none"> 1. Students understood Time series analysis with some important growth models and their fitting 2. Students forecasting using regression, non-linear regression techniques, single, double, triple and adoptive exponential smoothing models. 3. Students obtained knowledge on AR, MA, ARMA, ARIMA, models fitting, diagnostic checking, etc. <p>Check and validate models with its residual analysis and diagnostic checking.</p>

APST - 402	Reliability and Survival Analysis	2021	<ol style="list-style-type: none"> 1. Students learnt about and survival analysis with their related distributions, relationships, non-parametric methods for computing survival analysis. 2. Estimate nonparametric survival function of the data. 3. Explain test of exponentiality against nonparametric classes, two sample problems. Understand the elements of reliability, hazard function and its applications.
APST – 403A	Statistics for research, industry and Community development	2021	<ol style="list-style-type: none"> 1. Students have done Simulation models, response surface models, demand analysis, social survey and their related measures. 2. Students can understand the basic of research blooms taxonomy of learning levels. 3. Find the topic from current research in statistics education. 4. Students can apply the tools in design, research and developments.
APST-403B	Advanced econometric models	2021	<ol style="list-style-type: none"> 1. Students understood GLM, SURE, nested and non-nested statistical models. 2. Students learnt about specification error, adding, switching models. 3. Students performed Probit, logit models and their estimation. 4. Students can identify qualitative and limited dependent variable models
APST – 404	Practical -VII	2021	<ol style="list-style-type: none"> 1. Students solved Numerical problems related to semester –IV theory papers. 2. Students can understand how the statistics can play the role in the prediction of the future data. 3. Students can do the future predictions by using the existing data. Students can do the research on the statistical data.
APST - 405 A	Student Project: Data Centre / Institutions / Companies and etc.,	2021	<ol style="list-style-type: none"> 1. Students collected data in different ways. 2. Students can prepare different questioner for collection of the data. 3. Students can learn data entry in particular software, analysis and interpretation. 4. Students learn and prepare the details reports on the projects.

APST-405B	Statistical Quality Control	2021	<ol style="list-style-type: none"> 1. Students with their knowledge in control charts. 2. Students with their knowledge in Concept of Six sigma and its relationship with process capability. 3. Student have awareness about OC and ARL of Shewart's control charts Students have awareness about Total Quality Management.
APST - 406 A	(a) Statistics for Marketing Research	2021	<ol style="list-style-type: none"> 1. Students learnt about Research design and how to frame questionnaire etc. 2. Statistics relating to research like univariate test like Z, t, F, ANOVA, CRD, RBD and LSD are done. 3. Multivariate statistical techniques like factor analysis, dissemination analysis and cluster analysis are used. 4. Students can understand how the marketing is happening in the real life.
APST - 406 B	(b) Statistical Analysis Using SPSS	2021	<ol style="list-style-type: none"> 1. Able to create and manipulate vectors, matrices, arrays, data frames and lists. 2. Should be able to work with character data, factor data and dates. 3. Able to write scripts and function in Rand read data from. .csv files, EXCEL files and SPSS files. <p>Able to use built-in functions to answer questions relating to probability distributions, parametric and non-parametric hypothesis testing, correlation and regression analysis, and one-way and two-way ANOVA</p>

43. Virology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	VIR-101	Biological	2021	- To impart analytical knowledge in Biochemistry, to learn the basic concepts of

		Chemistry		<p>chemical processes of living organisms and the classification, structure, properties and functions of biomolecules of life (carbohydrates and lipids),</p> <ul style="list-style-type: none"> - To learn, the classification, structure, properties and functions of , proteins classification and mechanism of action of enzymes and enzyme kinetics. - To learn, the classification, structure, properties and functions of nucleic acids, hormones, growth regulators and importance of vitamins and - To learn about the principles of thermodynamics and metabolism of nucleic acids, lipids, proteins and carbohydrates.
2	VIR-102	Analytical Techniques	2021	<ul style="list-style-type: none"> - To understand the approaches involved in characterization and concentration of biomolecules and to train students in adopting various techniques involved in biological research such as microscopic, - To understand the approaches involved in chromatographic, centrifugal, and electrophoretic techniques. - To learn about various radioisotopes, spectroscopy and cell counting techniques that are used for characterization of biomolecules and - To learn about basic concepts of biostatistics such as measures of central tendency and dispersion, correlation and regression analysis, probability distribution and tests of significance.
3	VIR-103A (Or)	General Microbiology (Or)	2021	<ul style="list-style-type: none"> - Understand the origin, evolution, different groups and importance of microorganisms and learn the types, principles and applications of microscopy, morphology, and structure of bacteria. - Learn the basic concepts of media preparation, isolation, cultivation, enumeration, growth measurement, maintenance, and preservation methods of microorganisms. - Explain the general criteria for microbial classification, general characteristics of microorganisms, mechanism of nutrient transport in microbes and strategies used for control of microorganisms. - Describe the general characteristics, structure, reproduction of important fungi, algae and protozoan parasites.

5	VIR-103B	Microbial Physiology and Metabolism	2021	<ul style="list-style-type: none"> - Understand the fundamental aspects of nutrition and growth requirements and the mechanism of transport of nutrients in different groups of microorganisms and their importance - Learn the basic concepts of microbial growth characteristics metabolism of growth and microbial photosynthesis - Explain the general criteria for microbial metabolism of Carbohydrates, Aerobic and Anaerobic respiration - Describe the lipid, protein, nucleotide metabolism of microorganism
6	VIR-104A (Or)	General Virology (Or)	2021	<ul style="list-style-type: none"> - Learn the discovery, nature, origin and evolution of viruses and the physical, biochemical, and biological properties of viruses, criteria used for nomenclature and classification of bacteria, plant and animal viruses. - Describe the methods used for isolation, cultivation, and purification of viruses and criteria of purity. - Define biological, physical, biochemical, and serological methods used for quantitation of viruses, major characteristics of important plant and animal virus families and biology and applications of major RNA and DNA viruses of insects. - Understand the biology of major bacteriophages, algal and fungal viruses, subviral agents and importance of viruses in human welfare with suitable examples.
7	VIR-104B	Enzyme Technology	2021	<ul style="list-style-type: none"> - Acquire knowledge on Nomenclature and classification; general types properties and Kinetics of Enzymes - Learn the the properties and functions of viral enzymes, and mechanism of action of enzymes. - Learn the enzyme immobilization and Biosensors and their applications in industry, healthcare and environment. - : Learn the Applications of Enzymes in food processing, textile and pharmaceutical industries; Catalytic enzymes

8	VR-105A (Or)	Biological Chemistry & General Microbiology (Or)	2021	<ul style="list-style-type: none"> - Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of major biomolecules such as proteins, carbohydrates, lipids and nucleic acids. - Knowhow to isolate and check the activity of enzymes from various sources. - Define laboratory safety measures that need to be followed in Virology and Microbiology laboratories and know how to use different sterilization methods and preparation of media. - Acquire the practical skills to use cultivation, staining and characterization methods for different microorganisms and to check their stability under various conditions.
9	VR-105B	Biological Chemistry & Microbial Physiology and Metabolism	2021	<ul style="list-style-type: none"> - Learn to calculate normality, molarity, molecular weight and percentage of chemical substances and qualitative and quantitative estimation of major biomolecules such as proteins, carbohydrates, lipids and nucleic acids. - Knowhow to isolate and check the activity of enzymes from various sources. - Acquire the practical skills to usecultivation, staining and characterization methods for different microorganisms and to check their stability under various conditions. - Define the various methods of optimization of cultural conditions for bacterial growth and antibiotic assay methods
10	VIR-106A (Or)	Analytical Techniques & General Virology (or)	2021	<ul style="list-style-type: none"> - Learn to useultrafiltration, chromatography, and electrophoresis techniquesfor isolation and characterization of biomolecules. - Acquire the skills to usespectroscopic and centrifugal methods for characterization of biomolecules - Learn to isolate bacteriophages from different sources and cultivate viruses in

				<p>embryonated eggs and plants.</p> <ul style="list-style-type: none"> - Demonstrate the mechanical, aphid and graft transmission of plant viruses and methods used to check the stability of viruses and determine the effect of virus infection on plants through chlorophyll estimation.
11	VIR-106B	Analytical Techniques & Enzyme Technology	2021	<ul style="list-style-type: none"> - Learn to use ultrafiltration, chromatography, and electrophoresis techniques for isolation and characterization of biomolecules. - Acquire the skills to use spectroscopic and centrifugal methods for characterization of biomolecules. - Learn to estimate the blood sugar, urea. quantitative and qualitative assay of enzymes and their kinetics - Know how to isolate and check the activity of enzymes from various sources.
12	VIR-107	Human values and professional ethics– i	2021	<ul style="list-style-type: none"> - To enable the students to imbibe and internalize the moral values and ethical principles - To learn ethics moral and social values and ethical behavior in the personal and Professional lives. - To learn the rights and responsibilities and to appreciate the rights of others and to create awareness on religious values and other good acts and facts of life. - To acquire knowledge about the important facts of Bhagavad Gita, values hidden in religions, religious tolerance and aware of crime, and punishment theories
13	VIR-201	Cell Biology and Tissue Culture	2021	<ul style="list-style-type: none"> - To understand the structure and contents of prokaryotic and eukaryotic cells, - To understand general principles and pathways of cell communication and cell signaling. - To describe the concepts and methodologies of plant tissue cultures. - To describe the concepts and methodologies of animal tissue and organ cultures, cell counting and introduction to stem cell cultures

14	VIR-202	Microbial Genetics and Molecular Biology	2021	<ul style="list-style-type: none"> - Learn the terminology of molecular genetics, distinguish the prokaryotic and eukaryotic genome organization and describe modern concept of genes, plasmids, and mobile genetic elements. - Understand the gene transfer and mapping mechanisms in bacteria, genetics of viruses and learn about requirements and mechanism of DNA replication. - Acquire the knowledge about mechanism of DNA damage and repair, concept of mutations and their importance, requirements, and mechanism of transcription. - Understand the requirements and processes of translation, compare the levels of regulation of gene expression in prokaryotes and eukaryotes and learn about gene silencing mechanisms.
15	VIR-203A (Or)	Recombinant DNA Technology (Or)	2021	<ul style="list-style-type: none"> - To learn the scope, importance of genetic engineering, basic steps of gene cloning and the role of enzymes, vectors, oligonucleotides, and hosts in gene manipulation. - To learn basic and advanced tools and techniques, approaches and strategies used in gene manipulation in prokaryotic and eukaryotic systems - To learn the gene cloning strategies and learn the concepts and applications of genomics, proteomics, transcriptomics, and introduction to metagenomics, viromics. - To understand the strategies used for gene expression in heterologous hosts and applications/implications of genetic engineering in agriculture, medicine, industry and biology.
16	VIR-203B	Biostatistics and Bioinformatics	2021	<ul style="list-style-type: none"> - Understand basic concepts of statistics, construction of histogram, normal distribution, mean, median and standard deviation, comparison of means and variances, examples of proportion and count data. - :Learn the concepts of analysis of variance, correlation and regression and applications of statistical parameters for biological assays. - Learn basics of personal computer and its components, windows operating system, Microsoft office-2000, basics of internet browsing of biological data,

				<p>computer networking and information networks.</p> <ul style="list-style-type: none"> - Acquire knowledge about databases and tools, sequence analysis, phylogenetic analysis using bioinformatics tools and predictive methods using nucleotide and protein databases -
17	VIR-204A (Or)	Immunology (Or)	2021	<ol style="list-style-type: none"> 1. To compare innate and adaptive immunity and to learn about various components of immune system, 2. To learn about antigens, antibodies, <i>in vitro</i> and <i>in vivo</i> antigen and antibody interactions and immune effector mechanisms. 3. To elucidate the mechanism of humoral and cell mediated immune responses, MHCs, hypersensitivity reactions. 4. To acquire knowledge on autoimmune and immunodeficiency disorders, transplantation and transfusion immunology and concepts and applications of conventional and modern vaccines.
18	VIR-204B	Food and Environmental Biotechnology	2021	<ul style="list-style-type: none"> - Understand the the role of microbes in food ,neutraceuticals organic foods and functional foods - Learn the Importance of microorganisms in food production; Probiotics and prebiotics Food quality assurance and food laws - Describe the Food quality assurance and use of biosensors, biofilters, biofuel cells - Learn the Biosorption of heavy metals, GEMs and their products, Concept of biosafety
19	VIR-205A (Or)	Cell Biology and Tissue culture & Recombinant DNA Technology (Or)	2021	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up molecular biology laboratory with ribonuclease free environment. - Isolate cells, DNA and RNA from plant and animal tissues, demonstrate mitosis, plasmid curing, replica plate and gradient plate methods. - Acquire practical skills to isolate plasmids, restriction enzyme digestion of DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the southern and dot blot preparation for hybridization.

				<ul style="list-style-type: none"> - Solve the problems related to molecular biology and recombinant DNA technology and learn the basic bioinformatic tools that are important for DNA analysis
20	VIR-205B	Cell Biology and Tissue culture & Biostatistics and Bioinformatics	2021	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up molecular biology laboratory with ribonuclease free environment. - Isolate cells, DNA and RNA from plant and animal tissues, demonstrate mitosis, plasmid curing, replica plate and gradient plate methods. - Learn how to use MS office and create, edit tables in MS word and to develop knowledge to do simple statistics with Excel, to create statistical graphs and spread sheets in Excel for biological applications - Use internet, web tools, databases, and search engines for designing, planning, and executing biological research experiments or investigations. Analyze viral genome sequences using programs like Bio Edit and learn to use NCBI, EMBL for nucleic acid/protein analysis and phylogenetic tree construction. -
21	VIR-206A (Or)	Microbial Genetics and Molecular Biology & Immunology (Or)	2021	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up Cell and Molecular Biology laboratory with ribonuclease free environment. - Isolate and estimate DNA and RNA from microbial, plant and animal tissues and demonstrate curing of plasmids, replica plating techniques, conjugation in bacteria, Ames test, induction of mutations in bacteria by physical/chemical agents, isolation of microbial mutants by gradient plate method. - Identify of primary and secondary lymphoid organs in virtual animal model and illustrate basic immunology techniques such as counting of RBC and WBC, estimation of hemoglobin, identification of the blood groups and Rh. - Demonstrate antigen-antibody interactions by conducting <i>in vitro</i> serological tests such as immunodiffusion and immune-electrophoresis, DAC-ELISA, Dot-ELISA and western blotting and apply this practical oriented knowledge in Cell Biology and Immunology to foster employability in private industries, higher education in premier institutes

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22	VIR-206B	Microbial Genetics and Molecular Biology & Food and Environmental Biotechnology	2021	<ul style="list-style-type: none"> - Learn the safety practices and precautions to be followed in setting up Cell and Molecular Biology laboratory with ribonuclease free environment. - Isolate and estimate DNA and RNA from microbial, plant and animal tissues and demonstrate curing of plasmids.replica plating techniques, conjugation in bacteria, Ames test, induction of mutations in bacteria by physical/chemical agents, isolation of microbial mutants by gradient plate method. - Learn preparation of fermented food products, analyse the quality of water, milk and food ,vitamins - :Acquire the practical skills in the production of bofertilisers and biopesticides and biodegradation of pesticides
23	VIR-301	Plant Virology	2021	<ul style="list-style-type: none"> - Understand the induction of plant virus diseases, virus-host interactions and movement strategies. - Learn the vector and non-vector modes of plant virus transmission, virus-vector relationships and molecular mechanisms involved in virus vector interactions and the approaches used for identification and characterization of the viruses and virus strains. - Acquire the knowledge on plant virus spread and survival in nature and approaches used to detect plant viruses and diseases.
24	VIR-302	Plant Virus Diseases	2021	<ul style="list-style-type: none"> - Describe the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of cereals, millets and oil seed crops. - Learn the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of vegetable and tuber crops. - Acquire the knowledge of incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of food legume and fruit crops.

				<ul style="list-style-type: none"> - Discuss the incidence and impact, symptoms, causal virus characteristics, diagnosis, disease cycle and management of the major virus diseases of cash, spice, beverage, flowering and foliage ornamental crops
25	VIR-303A (Or)	Molecular Virology	2021	<ul style="list-style-type: none"> - Acquire knowledge about principles of virus architecture and effect of physical and chemical agents on viruses. - Learn about structure and diversity of viral genomes, general concepts of replication of viruses and expression and replication of DNA viruses - Learn about expression and replication of different RNA viruses and subviral agents such as viroids, Satellite viruses, defective interfering particles and prions. - Describe the regulation of viral genome expression and concepts/molecular mechanisms of transformation of cells by tumor viruses and therapeutic interventions and oncolytic viruses. -
26	VIR-303B	Tumor Virology	2021	<ul style="list-style-type: none"> - Acquire knowledge about the basic aspects of tumors, distinguish normal and transformed cells and describe the role of oncogenes and tumor suppressor genes in causing cancers. - Understand the role and mechanism of carcinogens in inducing carcinogenesis and molecular viral mechanisms of transformation and tumorigenesis. - Describe the types of RNA and DNA viruses that are causing tumors and viral mechanisms for cell transformation. - Learn the concepts and mechanisms of transformation, tumor response to tumors and prophylactic and therapeutic interventions used for management of tumors.
27	VIR-	Plant Virology and	2021	<ul style="list-style-type: none"> - Identify major virus diseases of local economically important crop plants and

	304A (Or)	Virus Diseases & Molecular Virology		<p>weeds through theory exercises, local field surveys, agricultural research station visits. Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts.</p> <ul style="list-style-type: none"> - Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules. Identify local plant virus vectors, determine virus disease incidence and progress curves through local field visits. - Acquire the skills to use the techniques involving purification of viruses such as maintenance of virus cultures on propagation hosts, check the quality and quantity of viruses using spectroscopy or transmission electron microscopy. Isolate virus coat proteins and determine its size and molecular weight through SDS-PAGE. - Isolate virus nucleic acids (dsRNA, RNA and DNA) and determine its size and molecular weight through agarose gel electrophoresis. Determine the stability of virus by studying effect of physical and chemical agents on virus inactivation
28	VIR-304B	Plant Virology and Virus Diseases & Tumor Virology	2021	<ul style="list-style-type: none"> - Identify major virus diseases of local economically important crop plants and weeds through theory exercises, local field surveys, agricultural research station visits. Determine and compare the effect of virus on cell size, chloroplast number, total carbohydrates, proteins, and lipids with healthy counterparts. - Detect unknown viruses through ELISA and PCR (theory exercise and practical) and demonstrate plant virus transmission by seed and vegetative propagules. Identify local plant virus vectors, determine virus disease incidence and progress curves through local field visits. - Acquire skills to detect carcinogens and mutagens using standard tests such as Ames test. Distinguish transformed and normal cell lines and determine the anticancer property of biologically active compounds.

				<ul style="list-style-type: none"> - Design and execute PCR and other point of care methods using commercial kits for detection of tumor viruses (HCV, HIV). Perform cultivation of poultry tumor viruses in cell cultures and acquiring the knowledge on histopathology of animal tumor viruses.
29	VIR-305A	Theory- Molecular Techniques	2021	<ul style="list-style-type: none"> - Explain the scope, importance of virology laboratory, lab equipment and laboratory biosafety health education and health communication. - Describe the basic methods and advanced tools and techniques, approaches and strategies used in virology, and their principles and applications. - Describe the the advanced molecular tools used in virology and to learn the concepts and applications of genomics, proteomics, transcriptomics, and introduction to metagenomics, viromics. - Understand the strategies used for drug design, artificial intelligence and modern vaccinology and applications in medicine
30	VIR-305B	Practical- Molecular Techniques	2021	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity, and ethical guidelines to be followed in the Molecular Virology laboratory. - Learn the Methods related to collection of clinical material for culture-urine, blood, throat swab, faeces, body fluids - Acquire practical skills to isolate plasmids from bacteria, restriction enzyme digestion of recombinant plasmid DNA, recovery of DNA from gels, transformation of bacteria and demonstrate the preparation of southern and dot blots for hybridization. - PCR amplification of coat protein gene and analysis by agarose gel

				electrophoresis, Isolation of metal nanoparticles and antiviral compounds from a plant. Purification and characterization of nanoparticles using ultracentrifugation, chromatography, FTIR, SEM, XRD and NMR.
31	VIR-306A (Or)	Basic Virology	2021	<ul style="list-style-type: none"> - To understand the history, properties, nomenclature and classification of viruses and development of virology and - 2. To learn about methods used for isolation, cultivation, and purification of viruses. - 3..To acquire knowledge about the methods used for quantitation of viruses and sub viral agents - To acquire knowledge about Laboratory Biosafety Management of plant, animal and human viruses
32	VIR-306B	Agricultural, Animal and Human Viruses	2021	<ul style="list-style-type: none"> - To acquire knowledge about the origin and evolution of the viruses and properties and cultivation of viruses - To learn about important animal viruses and veterinary epidemiology. - To learn about important plant and human viruses - To learn about important plant and human virus diagnostic and management methods
33	VIR-307	Communicative english and fundamentals of computers	2021	<ul style="list-style-type: none"> - Acquire the Oral and Aural Skills, Writing Skills, Job Skills and Soft Skills - Understand the Basics of personal computer and its components Windows Operating System-2010 Microsoft Office- - Learn to practice MS-Word, MS-Excel, MS-PowerPoint - Increase the awareness Introduction to InternetE-mailNetworking of Computers and overview of International and Indian networksInformation NetworksWWW, HTTP, HTML, URLs, EMB net, NCBI net, Virtual tourism
34	VIR-401	Animal and Human Virology	2021	<ul style="list-style-type: none"> - Understand the virus host interactions, host defense mechanisms against viruses and innate and adaptive immune responses to viruses, molecular mechanisms of viral pathogenesis with respect to polio, rotavirus, and cytomegalovirus.

				<ul style="list-style-type: none"> - Describe the various modes of vertical and horizontal transmission of animal and human viruses, zoonotic virus infections, mechanism of virus persistence, routes of entry and mechanism of virus spread in the body. - Learn about the epidemiological concepts of virus diseases, measures of disease occurrence, prevalence, and mapping, determinants of disease, factors affecting virus ecology and epidemiology of animal and human viruses. - Acquire knowledge on virus disease surveillance, strategies of virus maintenance in communities, principles of virus disease survey, methods of prevention and control of animal and human viruses.
35	VIR-402	Animal and Human Virus Diseases	2021	<ul style="list-style-type: none"> - Acquire the knowledge about etiology, transmission, clinical manifestations, diagnosis, prevention, and control of major RNA viruses of <i>Picornaviridae</i>, <i>Caliciviridae</i>, <i>Coronaviridae</i>, <i>Astroviridae</i>, <i>Matonaviridae</i>, <i>Togaviridae</i>, <i>Flaviridae</i>, <i>Reoviridae</i> and <i>Birnaviridae</i>. - CO2: Learn the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important RNA viruses of <i>Orthomyxoviridae</i>, <i>Paramyxoviridae</i>, <i>Rhabdoviridae</i>, <i>Filoviridae</i>, <i>Bunyaviridae</i>, <i>Arenaviridae</i> and <i>Retroviridae</i>. - Describe the etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses of <i>Circoviridae</i>, <i>Parvoviridae</i>, <i>Poxviridae</i>, <i>Herpesviridae</i>, <i>Papillomaviridae</i> and <i>Adenoviridae</i>. - Develop the knowledge about etiology, transmission, clinical manifestations, diagnosis, prevention, and control of important DNA viruses belonging to <i>Hepadnaviridae</i>, <i>Asfaviridae</i>, <i>Iridoviridae</i>, <i>Polydnaviridae</i> and <i>polyomaviridae</i> and understand the prion diseases, biology, prevention, and management of major viruses of silkworm, poultry, fish and prawn, emerging and reemerging virus diseases.

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36	VIR-403A	Applied Virology (Or)	2021	<ul style="list-style-type: none"> - Understand the basic concepts, types, requirements and methodologies of plant/animal cell and tissue cultures used for cultivation of plant and animal viruses. - Learn the production of recombinant DNA technology-based antibodies and vaccines to viruses and the concepts and methods of production of virus resistant/tolerant crops and virus-based biopesticides. - Acquire knowledge about common virus infections caused to human beings through vector and non-vector borne modes and basic principles of biosafety, biosecurity, and ethical/regulatory issues in Virology and basics in Intellectual Property Rights (IPR). - Understand the utilization of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology, phage display and therapy technologies and viruses as biological weapons.
37	VIR-403B	Virus-based Biotechnology	2021	<ul style="list-style-type: none"> - Understand the basic concepts, types and methodologies of plant / animal cell and tissue cultures and exploitation of viruses as viral genes/sequences as unique genetic resources, novel enzymes, gene expression activators and silencers, gene delivery systems, epitope display platforms and model systems in understanding the replication of nucleic acids and regulation of gene expression strategies and cancer biology. - Describe the exploitation of bacteriophages for peptide display and therapy, discuss the virus-based biopesticides and viruses as biological warfare, bio-crime and bioterrorism agents. - Learn the concepts and methods of production of recombinant DNA

				<p>technology-based antibodies and vaccines to viruses and understand the principles and applications of virus-based nanoparticles (virus nanoparticles and virus-like particles, VNPs and VLPs) in biotechnology.</p> <ul style="list-style-type: none"> - Describe the concepts and methods of production of virus resistant/tolerant crops and guidelines of testing and releasing the transgenic lines in India and learn about biosafety, biosecurity guidelines to be followed to conduct virus-related research and discuss the ethical and regulatory issues in virus-related research and basic concepts of IPR and Indian patenting system.
38	VIR-404A	Animal and Human Virology and Virus Diseases & Applied Virology (Or)	2021	<ul style="list-style-type: none"> - Acquire the skills to prepare the cell cultures and embryonated eggs for cultivation of plant, animal and human viruses and to isolate and quantitate viruses. - Learn the methods to detect plant and animal viruses and able to analyze various types of results obtained from serological and molecular viral diagnostic methods. - Apply the skills acquired to prepare NPV as biopesticides and virus-based nanoparticles and their isolation using analytical methods. - Participate in extension activities and field, poultry, agriculture research station and aqua form visits.
39	VIR-404B	Animal and Human Virology and Virus Diseases & Virus-based Biotechnology	2021	<ul style="list-style-type: none"> - Understand the biosafety, biosecurity and ethical guidelines to be followed in the molecular virology laboratory. - Learn the technologies related to preparation of media for cell/tissue cultures, preparation of cell cultures/embryonated eggs for virus cultivation and isolation and quantitation of viruses using differential centrifugation and symptomatology/spectroscopy, respectively. - Develop skills to test the animal, human and plant viruses using serological and molecular tests and kit-based methods. - Acquire knowledge on virus-based nanotechnology protocols, virus epidemiology by doing extension activities and visiting field, poultry, agriculture research station and aqua forms.

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40	VIR-405A	Theory-Industrial Biotechnology	2021	<ul style="list-style-type: none"> - Understand the cultivation of industrially important organisms Strain improvement methods and bioreactors - Learn the basic concepts of the types of fermentation processes and to learn about important Bioprocess control measurements - Describe the Downstream processing and its industrial applications, Quality assurance techniques and its importance in marketing. - Learn the industrial production of enzymes, beverages, alcohol and single cell proteins
41	VIR-405B	Practical- Industrial Biotechnology (Or)	2021	<ul style="list-style-type: none"> - Acquire the practical skills to use in cultivation, and screening of the industrially important microorganisms from different sources for the production of enzymes and organic acids. - Acquire the practical skills to use cultivation, and screening of the industrially important microorganisms from different sources for the production of wine and alcohol. - Learn the Quality testing of milk, quantitative analysis of lactic acid and Effect of heavy metals on bacteria. - visit to small scale industries to learn the processes in the production of industrially important products
42	VIR-405C	Project work related to Virology	2021	<ul style="list-style-type: none"> - Acquire basic understanding of virus taxonomy and virus properties and learn the concept of transmission, replication, cultivation and characterization of viruses. - Learn to collect, preserve the virus samples and detect the viruses by using biological, serological and molecular methods, good microbiological and

				<p>laboratory practices used in the clinical laboratories.</p> <ul style="list-style-type: none"> - Understand the properties, transmission, pathogenesis, epidemiology, diagnosis and detection of clinically important virus diseases. - Learn about the approaches used for prevention and control of clinically important infectious virus diseases. -
43	VIR-406A	Clinical Virology (Or)	2021	<ul style="list-style-type: none"> - Acquire basic understanding of virus taxonomy and virus properties and learn the concept of transmission, replication, cultivation and characterization of viruses. - Learn to collect, preserve the virus samples and detect the viruses by using biological, serological and molecular methods, good microbiological and laboratory practices used in the clinical laboratories. - Understand the properties, transmission, pathogenesis, epidemiology, diagnosis and detection of clinically important virus diseases. - Learn about the approaches used for prevention and control of clinically important infectious virus diseases.
44	VIR-406B	Emerging and Reemerging Viruses	2021	<ul style="list-style-type: none"> - Understand the evolution, biology, epidemiology, and emergence of infectious virus diseases, biology of emerging infectious diseases, zoonotic infections - Learn about the biology, clinical symptoms, epidemiology, diagnosis, and control of viruses causing AIDS and SARS and host defense mechanisms against infectious virus diseases. - Describe the biology, clinical symptoms, epidemiology, diagnosis, and control of vector borne emerging infectious viral diseases. - Acquire knowledge on impact of social and environmental change on emergence of viruses, vector control and antiviral therapies, vaccines, public health measures and bioterrorism. -
45	VIR-407:	Research aptitude	2021	<ul style="list-style-type: none"> - Aware of the Steps of Research; Methods of Research and communication

		and enterprenuership		<p>skills</p> <ul style="list-style-type: none"> - Learn the Data Interpretation Ethical Issues of Data Reporting and for Authenticity. Preparation of research proposal - Acquire the knowledge about the importance Information and Communication Technology (ICT) and Role of Entrepreneurship in Economic Development; Start-ups. - Acquire knowledge about the Idea Generation and Project Formulation, Institutions Supporting and Taxation Benefits
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44. Zoology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	ZOO-101	Invertebrata & Chordata	2021	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respective to their habit and habitat.</p> <p>iii. In depth understanding of Anatomical features of Integumentary, Circulatory, Reproductive, Respiratory, Receptor, Nervous systems among Chordate groups.</p>
2	ZOO-102	Metabolic Regulation & Cell Function	2021	<p>i.The students will learn about chemical bonding patterns, chemical structures and classification of carbohydrates and their structural and metabolic role in cellular system i.e. different pathways associated with carbohydrate metabolism.</p> <p>ii. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to perform wide range of analytical techniques to explore biological</p>

				<p>activities.</p> <p>iii. The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p>
3	ZOO-103A	Genetics & Evolution	2021	<p>i. Students will appreciate the concept of epigenetics as a key mechanism of regulation of gene expression steering development and cell fate that can ultimately be affected in disease condition</p> <p>ii. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>iii. Gained knowledge on the factors influencing the pattern of Evolution including Mutations, Natural Selection and Genetic drift.</p> <p>iv. Understood the concepts of Micro, Macro evolution speciation categories, Protein evolution etc. to fortify the existing knowledge on Evolutionary patterns.</p>
4	ZOO-103B	Endocrinology	2021	<p>i. Understand the pathways associated with Biosynthesis and secretion of Endocrine hormones and their role in the control of metabolism.</p> <p>ii. Through understanding of several endocrines including Peptide hormones, Steroid hormones, Pituitary hormones, Sex hormones, Thyroid hormones etc. in the control of metabolic pathways.</p> <p>iii. Understanding the influence of hormones on Growth, Development and Reproduction and their regulatory pattern.</p>
5	ZOO-104A	Tools & Techniques	2021	<p>i. Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>ii. Identify and describe the different equipment and tools used in a biology laboratory.</p> <p>iii. Correctly operate different laboratory instruments.</p> <p>iv. Correctly operate different types of microscopes.</p> <p>v. Prepare tissue for section cutting and correctly operate a</p>

				microtome.
6	ZOO-104B	Genetic Engineering	2021	<p>i. This course exposes students to the applications of genetic engineering in biological research.</p> <p>ii. Students will be able to perform basic genetic engineering experiments at the end of course.</p> <p>iii. Students will acquire knowledge of advances in biotechnology-healthcare, agriculture and environment cleanup via recombinant DNA technology.</p>
7	ZOO-105P	Practical-I Invertebrata & Chordata and Genetics & Evolution/ Endocrinology	2021	<p>i. Understanding the General Characteristics, Principles of classification, general biology of Invertebrate Communities.</p> <p>ii. To understand the various biological functions, the evolutions of life from most primitive to most advanced form with respect to their habit and habitat.</p> <p>iii. Understanding the comparative aspects of different organs systems among chordate Phyla.</p> <p>iv. The students may apply this knowledge in taxonomy related research and job opportunities.</p> <p>v. Explain the ideas about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations and sex determination.</p> <p>vi. To understand PTC, Colorblindness test, how to solve genetic problems, pedigree analysis.</p> <p>vii. Understood that the four propositions underlying Darwin's theory of evolution through natural selection are:</p> <ol style="list-style-type: none"> (1) more individuals are produced than can survive; (2) There is therefore, a struggle for existence (3) Individuals within a species show variation (4) Offspring tend to inherit their parental characters.
8	ZOO-106P	Practical-II Metabolic Regulation &	2021	<p>i. Students would gain expertise to develop understanding of biological processes at chemical; biochemical and molecular level to</p>

		Cell Function and Tools & Techniques/ Genetic Engineering		<p>perform wide range of analytical techniques to explore biological activities.</p> <p>ii.The student will learn and understand about the Biosynthesis of Purines and Pyrimidine Nucleotides, degradation of Nucleotides, salvage pathways, biosynthesis and biodegradation of Amino acids, inborn errors of metabolism.</p> <p>iii.Students would be trained in varioustools and techniques used to gain insight into biological processes.</p> <p>iv.Students would be expertise techniques used for imaging, isolation, purification and characterization of various biological substances.</p> <p>v.Students would gain basic knowledge of the underlying principles and practical strategy of the analytical and preparative techniques that are fundamental to study and understanding of life processes.</p> <p>vi.Students will become familiar with the tools and techniques of genetic engineering DNA manipulation enzymes, genome and transcriptome analysis and manipulation tools, gene expression regulation, production and characterization of recombinant proteins.</p>
9	ZOO-107	Audit Course Human Values and Professional Ethics-I	2021	<p>i. The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>ii. Introduction of several Nature of values to be performed by Humans to lead a good and Peaceful life by extending and imparting good behavior, character and conduct towards people of the society.</p> <p>iii. Introducing different concepts of Bhagavad Gita and its applications in uplifting of Religious values in the present society.</p>
10	ZOO-201	Molecular Biology	2021	<p>i. The study of Molecular Biology stands as a tribute to human curiosity for seeking to discover, and to human creative intelligence for devising the complex instruments and elaborate techniques by which these discoveries can be made.</p>

				<p>ii. Students world gain expertise in understanding the complex molecular mechanisms occurring in cell and the applications of molecular technologies for betterment of life.</p> <p>iii. Understand and our apply the Principles and techniques of Molecular Biology which prepares students for further education employment in teaching, basic research or the health Professions.</p>
11	ZOO-202	Cell Biology & Immunology	2021	<p>i. Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii. Students would gain expertise in the ultra-structural information of animal cell besides the detailed views of the cell interior revealing the various events and actions of cell at the molecular level.</p> <p>iii. The study will help the students to understand the new discoveries about the structure and internal functioning of the cell due to technological improvements.</p> <p>iv. The student will learn and understand the rationale behind various assays used in immune diagnosis of diseases and will be able to transfer knowledge of immunology in clinical perspective.</p> <p>v. The course will aid in understanding the principles of Graft rejection, Auto immunity and Antibody based therapy.</p>
12	ZOO-203A	Neurobiology & Animal Behavior	2021	<p>i. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials</p> <p>ii. Students leant and gain knowledge on structure and function of different types of Synapses</p> <p>iii. Gained information on different types of Neurotransmitters i.e.</p>

				<p>Amino acids and Peptides.</p> <p>iv. Understand the overview of Animal Behavior and prominence of social organization in insects and primates</p> <p>v. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p>
13	ZOO-203B	Bioinformatics & Biostatistics	2021	<p>i. Familiar with various Applications of Bioinformatics by exploring the fundamentals of computer applications in Biology.</p> <p>ii. Describe different methods of data handling using computer.</p> <p>iii. Perform basic operations of gene sequence retrieval and compare them using different software.</p> <p>iv. Perform basic operations of protein structure retrieval and comparison using different software.</p> <p>v. The student will learn about the Computer basics like Operating systems, Programming, Data Access, Internet and Nucleic acid Sequence and Protein Data Banks.</p> <p>vi. The student will learn the basics of handling of data, measures of Central tendency like Mean, Median and Mode, Measures of dispersion like Mean deviation and Standard deviation and Co-efficient of Variation.</p> <p>v. The course will aid in learning Test of significance like Null hypothesis and Alternative hypothesis, t-test, F-test, Chi-square test, Correlation and Regression analysis.</p>
14	ZOO-204A	Enzymology	2021	<p>i. Students gain knowledge about regulation of enzyme activity with respective mechanisms</p> <p>ii. To understand about mechanism of enzymes in clinical diagnosis and their applications</p> <p>iii. Students gain knowledge about immobilization of enzymes, applications of immobilized enzymes.</p>
15	ZOO-	Pathobiology	2021	<p>i. To understand the different pathogens causing disease in man.</p>

	204B			<p>ii. Describe the different parasites causing disease and disability in man and animals.</p> <p>iii. Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>iv. An understanding of the relationship between changes in physiology of host and</p> <p>v. The students after completion of the course based on the Expertise he/she may join as Parasitological Scientist.</p>
16	ZOO-205P	Practical-I Molecular Biology and Neurobiology & Animal Behavior / Bioinformatics & Biostatistics	2021	<p>i. Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern and western blotting, recombinant DNA technology etc. they will also know the various tools and techniques related to bacterial microbiology.</p> <p>ii. Learnt about structure, function and organization of Neurons in the Central nervous system</p> <p>iii. Understanding Electrophysiological techniques and Molecular mechanisms associated with action potentials.</p> <p>iv. Understand the overview of Animal Behavior and prominence of social organization in insects and primates.</p> <p>v. Gained lot of information on different types of Learning phenomenon and their mechanisms.</p> <p>vi. Students studying this course will be able to perform the data analysis using Statistical tools available on any computer such as Excel as well as the programmes for big and complex data.</p> <p>vii. Students learn and practice various statistical methods used in</p>

				Zoological studies and research.
17	ZOO-206P	Practical-II Cell Biology & Immunology Enzymology/ Pathobiology	2021	<p>i.Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signaling and cancers. They will know how to measure and stain different cell types.</p> <p>ii.Learn the fundamental principles of immune response including molecular, biochemical and cellular basis of immune homeostasis.</p> <p>iii. The course will aid in understanding various aspects of immunological response and how it's triggered and regulated.</p> <p>iv.Students learn about enzymes. Their classification and nomenclature</p> <p>v.Students learn about specificity of enzymes</p> <p>vi.Students learn about measurement of enzymatic activity</p> <p>vii.Students learn about isolation, purification of enzymes and intercellular distribution enzymes.</p> <p>viii.Ability to elaborate about the life cycle and biology of disease carrying vectors; suggest preventive and control measures for the said diseases.</p> <p>ix.An understanding of the relationship between changes in physiology of host andProgress of pathogenesis in human beings and animals.</p>
18	ZOO-207	Audit Course-II Human Values and Professional Ethics-II	2021	<p>i.Student will know the values of ethics in various fields including medical, social and business ethics.</p> <p>ii.The student will be enriched with several aspects pertaining to Human values and performing of Professional Ethics in day today life.</p> <p>iii.Introduction of several Natural values to be performed by Humans</p>

				to lead a good and Peaceful life.
19	ZOO-301	Developmental Biology	2021	<p>i.Students would gain expertise in explaining how a variety of interacting processes generate an organism's heterogenous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.</p> <p>ii.Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.</p> <p>iii.After learning the development of life from cell to multicellularity complex and coordinated systems in organisms the students can apply this knowledge for research, and education, to solve the problems related to development in animals through research.</p>
20	ZOO-302	Environmental Biology	2021	<p>i.Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.</p> <p>ii.Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.</p> <p>iii.Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.</p> <p>iv.Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.</p>
21	ZOO-303A	Animal Biotechnology	2021	<p>i.Understanding of in vitro culturing of organisms and production of transgenic animals.</p> <p>ii.Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>iii.This insight allows students to take into consideration about</p>

				<p>ethical issues involved in production of transgenic animals and BT products.</p> <p>iv. Use in gene transfer technology, genetic manipulations and in a variety of Industrial processes and prominence of IVF, Artificial insemination and embryo transfer techniques.</p>
22	ZOO-303B	Microbiology	2021	<p>i.Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny</p> <p>ii.Classify the nutritional types of microorganisms and measure microbial growth</p> <p>iii.Evaluate how microorganisms interact with the environment in beneficial or detrimental ways</p> <p>iv.Assess impact of plant- microbe interaction on agriculture in both beneficial and detrimental ways. Identify industrially important microbes.</p>
23	ZOO-304P	Practical-I Developmental Biology & Environmental Biology and Animal Biotechnology/ Microbiology	2021	<p>i.Developmental Biology displays a rich array of material and conceptual practices that can be analyzed to better understand the scientific reasoning exhibited in experimental life sciences. Based on learning contents of embryology, students can have a systematic and organized learning about the knowledge and concepts of growth and development.</p> <p>ii. To understand the fundamental processes that underpins the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.</p> <p>iii. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.</p> <p>iv.Students will be understanding the various features and aspects of</p>

				<p>population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.</p> <p>v.Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms and cloning vectors.</p> <p>vi.This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.</p> <p>vii.Identify microbiological techniques, the defining characteristics of the major groups of microorganisms and apply to study microbial phylogeny.</p> <p>viii.Apply the scientific method by stating a question; researching the topic; determining appropriate tests; performing tests; collecting, analyzing, and presenting data and effectively communicate with both specialist and non-specialist audiences/community.</p>
24	ZOO-305	Economic Zoology	2021	<p>i.Creating the self-employment opportunities to rural students through Animal husbandry, Aquaculture, Vermiculture and Sericulture.</p> <p>ii.To understand the significance of Economically important animals including cultivable Fishes, Prawns and their culture practices.</p> <p>iii.Identification of Animal pathogenic diseases in Fisheries, Sericulture, Apiculture, Aquaculture and their management strategies.</p>
25	ZOO-306A	Environmental Impact Assessment & Green Auditing	2021	<p>i.Be able to access and analyse different case studies/examples of EIA in practice for evaluation/assessment</p> <p>ii.Explain the importance of environmental audits and other management tools in business for social benefit by improving environmental performance</p>

				<p>iii. Calculate the carbon footprint of any organization and identify suitable mitigation strategies for carbon reduction solutions.</p>
26	ZOO-306B	Human Health and Infectious diseases	2021	<p>i. To understand the basic concepts of Infectious diseases and the role of immunity to control infections</p> <p>ii. Provides knowledge on the physiological mechanisms leading to diseased conditions.</p> <p>iii. Students gain knowledge on the pathogenesis and transmission of infectious diseases.</p> <p>iv. This insight allows the students to learn the treatment methods to control the growth and control of microbes.</p>
27	ZOO-401	Toxicology	2021	<p>i. The awareness about toxic agents, their effects and knowledge about mode of transformation of toxicants will help in creating skilled personnel in the field of environment protection and research.</p> <p>ii. Understanding of the physiological and genotoxic effects of drugs and environmental toxins.</p> <p>iii. To understand various types of insecticides and understand their mode of action to kill/control the insects. Also, the students will learn about novel categories of insecticides that may be compatible with other control strategies.</p> <p>iv. The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p>

28	ZOO-402	Comparative Physiology	Animal	2021	<p>i.The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>ii.An appropriate understanding of functioning of each system of different groups of animals with their comparison will be acquainted.</p> <p>iii.Understanding of the basic concepts of Physiological regulation, from cellular to organ to organismal.</p> <p>iv.Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fillet.</p>
29	ZOO-403A	Biodiversity Conservation	and	2021	<p>i.Student will gain knowledge about the diversity distribution pattern of the enormous number of species and different kind of ecosystems in the natural world.</p> <p>ii.The interaction between the various species and environment and the impact of social development on biodiversity</p> <p>iii.The importance of conservation of biodiversity which serving to the mankind and the ecosystem, and the major threats to biodiversity due to human developmental activities. The loss of biodiversity and the impact to the humankind.</p>
30	ZOO-403B	Animal husbandry and poultry farming		2021	<p>i. To understand Animal husbandry importance and applications to the farmers and industries .</p> <p>ii. To gain the knowledge, learn primary construction of dairy and poultry form establishment.</p> <p>iii. To gain knowledge in how to maintain the cattle and poultry forms.</p> <p>iv. To understand disease management strategies and control measures of cattle and poultry forms.</p>

31	ZOO-404P	Practical-Toxicology, Comparative Animal Physiology and Biodiversity and Conservation/ Animal husbandry and poultry farming	2021	<p>i.Skill development in environmental and occupational Toxicology.</p> <p>ii.It provides opportunities for student’s research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.</p> <p>iii.Identification of different routes of exposure of environmental toxins.</p> <p>iv.The students will learn handling of the pesticides in crop protection and understand the therapy and antidotes at the time of poisoning.</p> <p>v.The students will be able to explore an original query in Animal Physiology. The students will appreciate evolutionary changes and environmental adaptations in different taxa of Invertebrates and Vertebrates.</p> <p>vi.Understanding of how different groups of animals have different Physiological adaptations appropriate to carry out the required function to the fullest.</p> <p>vii.Student will gain knowledge about the diversity distribution pattern of the enormous number of species and different kind of ecosystems in the natural world.</p> <p>viii.The importance of conservation of biodiversity which serving to the mankind and the ecosystem, and the major threats to biodiversity due to human developmental activities. The loss of biodiversity and the impact to the humankind.</p> <p>ix.Will gain knowledge about legislations regarding the conservation of biodiversity.</p> <p>x. To understand the suitable breeds of livestock for rearing</p> <p>xi. To gain the knowledge how to apprise the various breeding techniques employed in live stock</p>
32	ZOO-405	Principles and Practices of Aquaculture	2021	<p>i. To understand significance, classification, history and cultivable species of aquaculture, and the inland water bodies suitable for</p>

				<p>culture in India</p> <p>ii. Through understanding criteria for the selection of species for culture</p> <p>iii. Various practices followed for the culture of fish and shrimp, and</p> <p>iv. Concepts of different types of culture.</p> <p>v. Feasibility of using sewage water for aquaculture</p>
33	ZOO-406A	Environmental Microbiology	2021	<p>i. Understand and describe the type of microorganisms in the environment and the role of microorganisms in the cycling of nutrients in an ecosystem.</p> <p>ii. Relate the role of microorganisms in spread of human diseases and select the type of physical and chemical agents for microbial control.</p> <p>iii. Understand the importance of plants and microbes in environmental remediation</p> <p>iv. Know the ethical guidelines in the use of GMOs, different biosafety levels and IPR</p>
34	ZOO-406B	Medical Biotechnology, IPR, Biostatistics and Bioethics	2021	<p>i. Students will gain awareness about Intellectual Property Rights (IPR) to take measures for protecting their ideas.</p> <p>ii. Gains knowledge on the Developmental stages of organism in Animal Biotechnology.</p> <p>iii. To understand and they will be able to devise business strategies by taking account of IPRs.</p> <p>iv. Students will develop awareness about bioethics and biosafety, Authorship and patenting / commercial rights and conflicts.</p>

Animal Biotechnology

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill Development
1	ABT-101	Metabolic Regulation & Cell Function (MRCF)	2021	<ul style="list-style-type: none"> • Knowledge on chemical bonds, thermodynamics principles and metabolisms of Glycolysis, TCA Cycle and their biomedical importance will be gained. • Metabolic disorders of urea cycle and importance of protein structure and functions can be understood. • Biosynthesis of purine and pyrimidine nucleotide and Clinical disorders of purine and pyrimidine metabolism can be learnt • To become proficient in Biomedical importance of lipids and overview metabolism of carbohydrate, protein and lipids
2	ABT-102	Tools & Techniques (TT)	2021	<ul style="list-style-type: none"> • Skills will be acquired on chromatography, centrifugation, electrophoresis and blotting techniques • To get knowledge on cell and tissue culture, cell types, culture media and overview of stem cell biology • To acquire skill on electrogenetic spectrum, type of detectors, electrophysiological methods and brain activity recording techniques • Microscopic techniques, different fixation and staining techniques, tissue processing for microtomy, cryotechniques will be learnt
3	ABT-103A	Microbiology and Diseases	2021	<ul style="list-style-type: none"> • Microorganisms classification and structure of

				<p>prokaryotic and eukaryotic microorganism can be understood</p> <ul style="list-style-type: none"> • To get knowledge on Nutritional requirements to microorganisms, growth of microorganism, control of microorganism and microbes of biotechnological importance • To become proficient in chemical nature of gene, plasmids incompatibility, horizontal transfer of genome among the microbial community and Benzer's classical studied on II locus • To learn diseases caused by microorganisms
4	ABT-103B	Environmental Biology	2021	<ul style="list-style-type: none"> • Abilities will be developed to solve the problems related to the environment, to make them aware of various eco-friendly techniques and modern techniques to solve various environment-related problems. • To make awareness among the young students about the surrounding environment, the impact of climate change and its mitigation and biodiversity. • The aim of the contents of this course is to introduce and explain about various conservation issues of the ecosystem and animals. • Man himself is a part of ecosystem. The ecosystems in the world are continuously under the pressure of anthropogenic activities and human mediated ecological changes. Several animal species are under the survival threats. To introduce the students about wildlife and wild habitats, about depleting wild life and human wildlife conflict.

5	ABT-104A	Environmental Biotechnology	2021	<ul style="list-style-type: none"> • To gain knowledge on waste and pollutants, hazards from wastes and pollutants and hazards from chemicals in wastes • Waste treatment, treatment of liquid wastes, treatment of solid waste and contributions of biotechnology to waste treatment will be understood • To become proficient in aerobic waste water treatment and measurement of pollution levels • To learn anaerobic treatment of waste water, biodegradation of xenobiotics compounds, hazards from xenobiotics and bioremediation
6	ABT-104B	Human Health and Infectious Diseases	2021	<ul style="list-style-type: none"> • Introduction to the basic concepts of pathophysiology of infectious diseases • Major infectious diseases transmission to humans and response of immunity will be studies • To understand the Pathogenesis, mechanisms of pathogenesis; transmission and epidemiology of various bacterial, viral, fungal and protozoan diseases. • Sexually transmitted diseases will be studies
7	ABT-105P	Practical-1 Metabolic Regulation & Cell Function & Microbiology and Diseases/ Environmental Biology	2021	<ul style="list-style-type: none"> • Practical knowledge will be gained on biochemical assays like estimation of proteins, structural proteins, soluble proteins, free amino acids, total carbohydrates and total cholesterol. • To gain knowledge in handling equipments like cooling centrifuge, autoclave, laminar air flow etc., and, maintenance of animal cell culture laboratory. • To learn microbial media preparation for their culture and identification

8	ABT-106P	Practical-2 Tools & Techniques & Environmental Biotechnology/ Human Health and Infectious Diseases	2021	<ul style="list-style-type: none"> • Identification of proteins by using blotting technique • Practical knowledge will be gained on cell/tissue culture, culture media preparations • To learn tissue processing techniques for microscopic examination
9	ABT-107	Audit Course-I Human Values and Professional ethics-I	2021	<ul style="list-style-type: none"> • Knowledge will be gained on nature of ethics its relation to religion. Politics, Business • To understand nature of values Good and Bad, end and means, analysis of basic moral concepts, good behavior and respect for elders, character and conduct • Proficient on hagavad Githa • Crime and theories of punishment will be learnt
10	ABT-201	Molecular Biology (MB)	2021	<ul style="list-style-type: none"> • To gain knowledge on DNA structure, genome of Nuclear and mitochondrial and maternal Inheritance • To understand replication in prokaryotes, Enzymology of DNA replication, Discontinuous replication and Bidirectional replication • Synthesis of RNA, Types of RNA, Genetic code and Ribosome structure will be understood • Knowledge will be gained regulation I and II and Operon concepts
11	ABT-202	Animal Cell culture & Stem Cell Biology (ACC-SCB)	2021	<ul style="list-style-type: none"> • To understand animal cell culture, biology of stemcells and embryonic stem cell • To learn propagation of embryonic stem cells, nuclear transfer technology, animal cloning and stem cell differentiation

				<ul style="list-style-type: none"> • To gain knowledge on stem cell plasticity, stem cell assay and protocols, stem cell separations and stem cell therapies • To learn stem cells and tissue engineering, human embryonic stem cells and society, intellectual property results
12	ABT-203A	Cell Biology & Immunology (CB&IM)	2021	<ul style="list-style-type: none"> • Able to learn organization of prokaryotic and eukaryotic cell, Nucleus structure, Eukaryotic chromosome and polytene and lamp brush chromosomes • To learn mechanism of cell division, regulation of eukaryotic cell cycle, chromosomal abnormalities and tumor biology • To understand types of immunity, types of cell involved in immune response, structure and function of antibody and complement cascade • To gain knowledge on Antigen presentation, hypersensitivity reactions, immune tolerance and immunopathology
13	ABT-203B	Animal Biotechnology	2021	<ul style="list-style-type: none"> • To introduce a detailed achievements of Biotechnology, Genetic Engineering and r-DNA technology principles. • To gain knowledge on cloning vectors and their uses in gene cloning technologies. • Principles of Cloning strategies and screening analysis of Re-combinations. • To apply principles of Biotechnology concepts in veterinary sciences i.e. production of Transgenic

				<p>animals, Artificial insemination, Invitro fertilization, Embryo transfer technology.</p> <ul style="list-style-type: none"> • Application of Biotechnological principles in Medicine and Gene transfer techniques. • To understand the uses of Fresh and marine pearl culture technology, IPR, Patents and Copyrights.
14	ABT- 204A	Toxicology	2021	<ul style="list-style-type: none"> • To understand the toxicodynamics, toxicokinetics of toxicants, xenobiotic metabolism, , chemical carcinogenesis, hepatotoxicology, genetic toxicology, developmental toxicology, renal toxicology, toxic effects of pesticides, toxic effects of metals, toxic effects of radiation, venoms and animal poisons, air pollution, ecotoxicology, food toxicology, forensic toxicology, occupational toxicology, regulatory toxicology, other. • To apprise the students about the toxicants along with their application and their effects on biosphere as well as human health
15	ABT-204B	Endocrinology	2021	<ul style="list-style-type: none"> • To study the concepts of Hormones, Structural features of Endocrine Glands • Identification of Endocrines glands of the body and their secretions • To study the evolution of Pancreatic and Adrenal gland hormones • To study the evolution of Thyroid and Parathyroid hormones and their role in the regulation of metabolism
16	ABT-205P	Practical -1 Molecular Biology & Cell Biology &	2021	<ul style="list-style-type: none"> • To gain knowledge on DNA/RNA isolation from

		Immunology / Animal Biotechnology		<p>animal tissues</p> <ul style="list-style-type: none"> To perform PCR based techniques like RAPD, Gene expression studies and disease diagnosis
17	ABT-206P	Practical-II Animal Cell culture & Stem Cell Biology & Toxicology/ Endocrinology	2021	<ul style="list-style-type: none"> To estimate the sperm motility, sperm count , sperm membrane integrity test and pH of semen. Determination sperm viability Preparation of primary and secondary cell culture
18	ABT-207	Audit Course-II Human Values and Professional Ethics–II	2021	<ul style="list-style-type: none"> To gain knowledge on value education To learn medical ethics To become proficient on business ethics To understand environmental ethics and social ethics
19	ABT-301	Enzymology (ENZ)	2021	<ul style="list-style-type: none"> To understand enzyme specificity, enzyme catalysis and isolation and purification of enzymes To gain knowledge on theories of enzymes kinetics, enzyme kinetics and its importance, effect of reactant concentrations and effect of temperature of pH and enzyme concentration reaction rate To become proficient on clinical aspects of enzymology, immobilized enzymes, isoenzymes and enzyme engineering
20	ABT-302	Animal Reproduction, Breeding & Transgenic Technology (ARBTT)	2021	<ul style="list-style-type: none"> To become proficient on structure and function of male and female reproductive system; reproductive cycles and contraception in male and females To gain skill on sex determination, selection for qualitative inherited characters, parental determination

				<p>and verification and progeny testing</p> <ul style="list-style-type: none"> • To understand artificial insemination techniques, in vitro fertilization, embryo transfer technology, microinjection and macroinjection • To learn transgenic technology development, generation of chimeric, transgenic and knockout mice
21	ABT-303A	Bioinformatics& Biostatistics	2021	<ul style="list-style-type: none"> • To understand prediction of protein structure and protein sequence database, prediction of gene structure, submission of sequence to database, phylogenetic analysis • To learn biostatistics, measures of location and dispersion, curve fitting and correlation and regression • To understand probability distribution, tests of significance, student t-test and F-test, chi square test and their application
22	ABT-303B	Genetic Engineering (GE)	2021	<ul style="list-style-type: none"> • Use of enzymes in DNA and RNA synthesis, restriction enzymes and ligation and modification o DNA • To learn vectors for constructions of genomic libraries, expression vectors, promoters and vectors used for cloning • To gain knowledge on DNA fragments, cDNA synthesis, PCR • To become proficient on ligation between cohesive and blunt end DNA fragments, introduction of cloned genes into host and expression of cloned genes

23	ABT- 304P	Enzymology / Animal Reproduction, Breeding & Transgenic Technology / Bioinformatics& Biostatistics/ Genetic Engineering	2021	<ul style="list-style-type: none"> • To determine the effect of substrate concentration, enzyme concentration and temperature on enzyme activity • Measurement of central tendency • Correlation and regression analysis • Retrieval of gene and protein sequence from gene and protein bank, redelivery
24	ABT-305	Bio resource Technology (Apiculture, Sericulture, Aquaculture, Vermiculture)	2021	<ul style="list-style-type: none"> • To understand Types of honey bees, life history of honey bees, management of apiculture and by products of honey bees and economic importance disease and their control • To become proficient on fresh water fin fish culture, shell fish (prawn and Pearls) culture • To understand historical background of vermicompost, methods of vermiculture and problems involved in vermicompost
25	ABT-306A	Animal Biotechnology & Industrial Applications	2021	<ul style="list-style-type: none"> • To gain knowledge on preservation animals engineered bacteria/yeast/ cell lines, metabolic engineering, fermentative production and glycolytic pathway • To understand monoclonal antibodies production and genetically engineered products • To know the DBT guidelines, Global scenario of transgenic micro organisms and ethical issues related to biotechnology products.
26	ABT-306B	Cancer Biology	2021	<ul style="list-style-type: none"> • To gain knowledge on cancer types and tumor

				<p>development</p> <ul style="list-style-type: none"> • To learn oncogenes, mechanisms of onogene activation and chromosomal translocation • To understand cell cycle regulation and cancer, DNA Damage and repair • To learn tumor immunology, Vaccine development, tumor cell evasion of immune defenses
27	ABT-401	MedicalBiotechnology (MBT)	2021	<ul style="list-style-type: none"> • To understand disease diagnosis, use of monoclonal antibodies in detection of genetic disease • To learn Disease treatment, interferons, growth factor, and antisense nucleotide as therapeutic agent • To gain knowledge on gene therapy, types of gene therapy, augmentation therapy and targeted transfer • To become proficient on forensic medicine, preparation of DNA sample. Approaches for DNA analysis and applications of forensic medicine
28	ABT-402	Fermentation Technology and Downstreaming Process(FTDSP)	2021	<ul style="list-style-type: none"> • To understand cell distribution methods, separation techniques, purification by chromatographic techniques and isolation and screening and maintenance of industrially importance microbes • To learn bioreactor design, fermentation economics, upstream processing, membrane based separations • To gain knowledge on importance of downstream processing economics of downstream

				processing
29	ABT-403A	Drug design and Development	2021	<ul style="list-style-type: none"> • To learn drug design, analog approach of drug designing • To understand SAR Vs QSAR, Partition coefficient, Hammett substituent constant and Taft steric constant, Free Wilson mode, 3D-QSAR approach like COMFA and COMIA • To gain knowledge on pharmacological screening and assays, pharmacological screening models for therapeutic areas, cell based assay, biochemical assay, radiological binding assay, small molecule manufacturing • To learn Drug Laws, FDA, OECD, ICH, Schedule Y, drug registration, Regulations of human pharmaceuticals and biological products, and clinical trial design
30	ABT-403B	Biosafety, Bio Ethics & Intellectual Property rights	2021	<ul style="list-style-type: none"> • To understand socio-economic and legal impact of biotechnology, use of genetically modified organisms, moral and ethical issues in biotechnology and safety issues with GMO • To learn intellectual property right, evaluation of patenting, application of GATT and IPR and WTO Act and global and Indian biodiversity • To gain knowledge on Indian Patent Act 1970, role of country patent office, U.S. Patent trademark office and U.S. Patent system Vs Indian Patent system • To gain knowledge on Ethics and genetic engineering, patent of genes, human cloning, stem cell,

				regulatory requirements for drugs and biologics, GLP and GMP
31	ABT- 404	Project(Dissertation preparation & Submission)	2021	<ul style="list-style-type: none"> Students must perform project work which includes experiments related to Toxicology, Animal Tissue culture, Fermentation technology or any work related to biology. After completion of project work students have to prepare dissertation by their own and submit to the committee members.
32	ABT-405	Viva-Voce	2021	<ul style="list-style-type: none"> Evaluation of dissertation will be conducted by committee members through Viva-Voce
33	ABT-406A	Advanced Genomics and Proteomics	2021	<ul style="list-style-type: none"> To learn structure of Prokaryotic and Eukaryotic genomes, Isolation and purification of genomic DNA, Construction of Physical maps and Whole genome sequence alignment To understand genome annotation, methods for gene identification, functional genomics, transcript profiling To learn protein structure, sample preparation and separation 2D-analysis, Multidimensional liquid chromatography, protein-protein interactions analysis To gain knowledge on DNA /protein sequence homologies, Gene duplication and divergence, and evolution of novel genes and proteins, DNA quantities and non-coding sequences (transposons) in genome evolution
34	ABT-406B	Animal Cell Culture Techniques	2021	<ul style="list-style-type: none"> To understand Animal cell culture, culture medium, characteristics of cell in culture, measurement

				<p>of viability and cytotoxicity , cell types and apoptosis</p> <ul style="list-style-type: none"> • To gain knowledge in scaling up of animal cell culture, cell transformation, tissue engineering, transgenic animals, animal cloning • To become proficient in improvement of biomass, pharming products, plasminogen activator and ethical issues related to biotechnology products
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45. Business Management

S.No	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/ Skill development	Link to the relevant Document
1	MBA 101	Management And Organisational Behaviour	2021	<p>Examine the Management concepts and functions.</p> <p>Apply the concepts of planning, decision making.</p> <p>Apply the concepts of delegation of authority, decentralisation and departmentation in real life situations.</p> <p>Analyse the controlling principles and practices, Ethics and corporate social responsibility.</p> <p>Evaluate the basic concepts of organizational conflicts and climate.</p>	
2	MBA 102	Managerial Communications	2021	<p>Apply the basic concepts of communication for business correspondence.</p> <p>Distinguish different forms of communication.</p> <p>Evaluate different types of communication.</p> <p>Adapt report writing skills of different types on</p>	

				<p>need basis.</p> <p>Acquire presentation skills along with the interview techniques.</p>	
3	MBA 103	Managerial Economics	2021	<p>Describe the importance of managerial economics and its contribution to decision making in different types of business organizations by the managerial economist.</p> <p>Apply the basic principles of managerial economics.</p> <p>Apply demand analysis concept in the real life business situations.</p> <p>Discuss the meaning and usefulness of the production function and cost function in analysing the firm's production activity.</p>	
4	MBA 104	Accounting For Managers	2021	<p>Outline the basic knowledge of accounting, bookkeeping, accounting Principles, accounting cycle.</p> <p>Apply the concepts of journal, ledger and Trail balance.</p> <p>Identify the nature of expenditure and revenue for preparation of financial statements of business.</p> <p>Examine the role of accounting policies like depreciation.</p>	
5	MBA 105	Quantitative Analysis For Management Decisions	2021	<p>Recall the fundamentals in Mathematics and Statistics.</p> <p>Demonstrate the methods to solve derivatives, progressions and gaming.</p> <p>Choose decision making in a competitive situation.</p> <p>Solve transportation Problem with minimum cost of transport of commodities.</p>	

7	MBA 106	Business Statistics	2021	About the information needs, sources of data and measures of central tendency . The concept of Scientific Research and the methods of conducting Scientific Enquiry. The Statistical Tools of Data Analysis.	
8	MBA 108	Human Values And Professional Ethics	2021	About ethics, values and morals. The concepts of value based education and its relevance. Learn about environmental and social ethics	
9	MBA 201	Marketing Management	2021	Outline the concepts of marketing. Create the segmentation, targeting and positioning in marketing. Analyse various phases of product life cycle. Evaluate various methods of pricing and identify the best pricing strategy. Evaluate marketing communication strategies.	
10	MBA 202	Financial Management	2021	Outline the basic concepts of Financial Management. Comprehend the various methods of Investment Analysis and apply various techniques of capital budgeting. Adapt the concepts of leverage, capital structure and its effect on the long term survival of the firm. Appraise various methods of computation of cost of capital.	
11	MBA 203	Human Resources Management	2021	Outline the functions and challenges of HRM. Apply different concepts of HR Planning, Recruitment, Selection, Training, Interviewing Techniques and Executive Development Programs. :Apply the uses of job analysis, job description, job specification, ergonomics in industry and	

				<p>the methods of job evaluation.</p> <p>Utilize the various methods of performance appraisal.</p>	
12	MBA 204	Production Management	2021	<p>Apply the basic concepts of production and operations management and identify types of manufacturing processes.</p> <p>Define and explain concept of production planning and control.</p> <p>Identify effective plant location and plant layout.</p> <p>Design strategies to improve productivity.</p>	
13	MBA 205	Business Research Methods	2021	<p>Adapt the fundamentals of Business research methodology.</p> <p>Identify research problem.</p> <p>Apply sample and census survey and measuring techniques.</p> <p>Design data collection techniques.</p> <p>Develop data processing procedures and apply tools.</p> <p>Draft thesis/report writing.</p>	
14	MBA 207	Management Information Systems	2021	<p>Understand various types of information systems.</p> <p>Analyse the various functional information systems</p>	
15	MBA 206	Operation Research	2021	<p>Understand various concepts and techniques of OR.</p> <p>Apply various OR techniques to improve the efficiency of the organisations.</p>	
16	MBA 208	Leadership Values and Styles	2021	<p>Identify the leadership qualities to run an organization successfully.</p> <p>Appraise the various concepts of value based leadership.</p>	

46. Computer Science

Master of Computer Applications (MCA)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	MCA 101	Discrete Mathematical Structures	2021	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution
2	MCA 102	Object Oriented Programming with Java	2021	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent language JAVA SDK.
3	MCA 103	Computer Organization	2021	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.

4	MCA 104	Operating Systems	2021	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
5	MCA 105	105A.Accounting and Financial management 105B.Accounting Essentials for Computer Applications	2021	<ol style="list-style-type: none"> 1. Use of Accounting information to managers with in the organization. 2. Informs the business decision & control the Management Functions.
6.	MCA 106 P	Software Lab I (based on 101 & 103)	2021	<ol style="list-style-type: none"> 1. The students become familiar with the Sampling Distributions like with replacement and without replacement 2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it. 3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution. 4. To gain knowledge about the Micro Processors. 5. To study the hierarchical memory system including cache memories and virtual memory
7.	MCA 107 P	Object Oriented Programming Lab	2021	<ol style="list-style-type: none"> 1. Solve and Implement solution for the problem using java basic elements like variables, control structures. 2. Handle Object Oriented Concepts effectively in the real time problems. 3. Understand the architecture and working procedure of platform independent

				language JAVA SDK.
8.	MCA 108P	Operating Systems Lab	2021	<ol style="list-style-type: none"> 1. Learn evaluation of different types Operating System and their functionalities. 2. Learn Internal structure and the function procedure of Operating system in detail.
9.	MCA 201	Computer Oriented Operations Research	2021	<ol style="list-style-type: none"> 1. solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. analyse the general nonlinear programming problems. 4. formulate the nonlinear programming models.
10.	MCA 202	Data Structures using Java	2021	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
11	MCA 203	Data Communication and Computer Networks	2021	<ol style="list-style-type: none"> 1. Understand the Network Terminologies and the components used to build networks. 2. Understand Network Models (Topologies) to establish networked systems. 3. Understand the internal architecture, working procedure of OSI Layer and Protocols.

12	MCA 204	Advanced Database Management Systems	2021	<ol style="list-style-type: none"> 1. Students will get an attempt to provide with the advanced information about ADBMS and their development. 2. This Subject also provides the conceptual background necessary to design and develop distributed database System for real life applications and also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms. 3. How SQL Programs are implemented as a series of primitive operations and how DDBs are implemented and how applications are design for those DDB
13	MCA 205	205A. E-Commerce	2021	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of management information systems. 2. Have the knowledge of the different types of management information systems. 3. Understand the processes of developing and implementing information systems and be aware of the ethical, social, and security issues of information systems;
14		205B. Cyber Security	2021	<ol style="list-style-type: none"> 1. Analyze and evaluate the cyber security needs of an organization and determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. 2. Measure the performance and troubleshoot cyber security systems and implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics

				<p>software/tools.</p> <p>3. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators, Design and develop a security architecture for an organization and design operational and strategic cyber security strategies and policies.</p>
15		205C. Neural Networks	2021	<p>1. Define what is Neural Network and model a Neuron and Express both Artificial Intelligence and Neural Network.</p> <p>2. Analyze ANN learning, Error correction learning, Memory-based learning, Hebbian learning, Competitive learning and Boltzmann learning.</p> <p>3. Implement Simple perception, Perception learning algorithm, Modified Perception learning algorithm, and Adaptive linear combiner, Continuous perception, learning in continuous perception.</p>
16	MCA 301	Software Engineering	2021	<p>1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC.</p> <p>2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements.</p>

				<ol style="list-style-type: none"> Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
17	MCA 302	Computer Graphics	2021	<ol style="list-style-type: none"> Understand the basics of computer graphics, different graphics systems and applications of computer graphics. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis and Use of geometric transformations on graphics objects and their application in composite form. Extract scene with different clipping methods and its transformation to graphics display device, Explore projections and visible surface detection techniques for display of 3D scene on 2D screen and Render projected objects to naturalize the scene in 2D view and use of illumination models for this.
18	MCA 303	Web Technologies	2021	<ol style="list-style-type: none"> Explain the history of the internet and related internet concepts that are vital in understanding web development. Discuss the insights of internet programming and implement complete application over the web and students can Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.

				<p>3. Utilize the concepts of JavaScript and Java, Use web application development software tools i.e. Ajax, PHP and XML etc. and identify the environments currently available on the market to design web sites.</p>
19	MCA 304	304A.Data warehousing and Data mining	2021	<ol style="list-style-type: none"> 1. To identify the scope and essentiality of Data Warehousing and Mining and to analyze data, choose relevant models and algorithms for respective applications. 2. To study spatial and web data mining. 3. Students develop research interest towards advances in data mining.
20		304B.Big Data Analytics	2021	<ol style="list-style-type: none"> 1. Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. 2. Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. 3. Students Interpret business models and scientific computing paradigms, and apply software tools for big data analytics and achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications
21		304C System Programming	2021	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied

				<p>information in these areas to design system software with realistic constraints.</p> <ol style="list-style-type: none"> 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming.
22	MCA 305	305A. Cryptography and Network Security	2021	<ol style="list-style-type: none"> 1. Provide security of the data over the network and do research in the emerging areas of cryptography and network security. 2. Implement various networking protocols. 3. Protect any network from the threats in the world
23		305B. Artificial Intelligence	2021	<ol style="list-style-type: none"> 1. Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. 2. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. 3. Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool, Demonstrate proficiency in applying scientific method to models of machine learning and Demonstrate an ability to share in discussions

				of AI, its current scope and limitations, and societal implications.
24		305C.Mobile Application Development	2021	<ol style="list-style-type: none"> 1. Identify various concepts of mobile programming that make it unique from programming for other platforms, Critique mobile applications on their design pros and cons. 2. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 3. Program mobile applications for the Android operating system that use basic and advanced phone features, and deploy applications to the Android marketplace for distribution.
25	MCA 401	401A.Cloud Computing	2021	<ol style="list-style-type: none"> 1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. 2. Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient. 3. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model. 4. Illustrate the fundamental concepts of

				cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
26		401B. Dot Net Technologies	2021	<ol style="list-style-type: none"> 1. To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. 2. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but webdistributed, or executed remotely. 3. Make the developer experience consistent across widely varying types of apps, such as Windowsbased apps and Web-based apps.
27		401C. Software Testing	2021	<ol style="list-style-type: none"> 1. List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects. 2. Distinguish characteristics of structural testing methods and demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. 3. Discuss about the functional and system testing methods and demonstrate various issues for object oriented testing.
28	MCA 402	402A. Essentials of Data Science	2021	<ol style="list-style-type: none"> 1. Having a clear understanding of the subject related concepts and contemporary issues. 2. Having problem-solving ability- to assess social issues and engineering problems.

				<ul style="list-style-type: none"> 3. Having a clear understanding of professional and ethical responsibility. 4. Having cross-cultural competency exhibited by working as a member or in teams. And having a good working knowledge of communicating in English – communication with the engineering community and society
29		402B.Deep Learning	2021	<ul style="list-style-type: none"> 1. Understand the role of deep learning in machine learning applications and get familiar with the use of TensorFlow/Keras in deep learning applications. 2. Compare Various deep learning Algorithms used for Classification Segmentation and detection. 3. Apply various concepts related with Deep Learning to solve Problems. Analyse different deep learning models in Image related projects.
30		402C.Internet of Things	2021	<ul style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
31	MCA 403	Major Project Work	2021	

M.Sc (CS) : Master of Computer Science

S.	Course Code	Title of the Course	Years of	Activities/Content with direct bearing on
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No.			Introduction	Employability/Entrepreneurship/Skill development
1	MSCS -101C	Computer Organization	2021	<ol style="list-style-type: none"> 1. To gain knowledge about the Micro Processors. 2. To study the hierarchical memory system including cache memories and virtual memory.
2	MSCS -102C	Programming in Java & Data Structures	2021	<ol style="list-style-type: none"> 1. Develop a program a structured Programming Using JAVA. 2. Develop a Memory Handling work & Sequential Data file handling. 3. Maintain data using proper data organizing structures.
3	MSCS -103C	Operating Systems	2021	<ol style="list-style-type: none"> 1. Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,. 2. Analyze important algorithms eg. Process scheduling and memory management algorithms. 3. Categorize the operating system's resource management techniques, dead lock management techniques, memory management techniques. 4. Demonstrate the ability to perform OS tasks in Red Hat Linux Enterprise.
4	MSCS – 104 GE – A	Mathematical Foundations For Computer Science	2021	<ol style="list-style-type: none"> 1. Ability to apply mathematical logic to solve problems. 2. Understand sets, relations, functions, and discrete structures. 3. Able to use logical notation to define and reason about fundamental mathematical

				<p>concepts such as sets, relations, and functions.</p> <ol style="list-style-type: none"> 4. Able to formulate problems and solve recurrence relations. 5. Able to model and solve real-world problems using graphs and trees.
5	MSCS – 104 GE - B	Computer Oriented Operational Research	2021	<ol style="list-style-type: none"> 1. Solve the problems using special solution algorithms and use CPM and PERT techniques, to plan, schedule, and control project activities. 2. Formulate and solve problems as networks and graphs and set up decision models and use some solution methods for nonlinear optimization problems. 3. Analyse the general nonlinear programming problems. 4. Formulate the nonlinear programming models.
6	MSCS - 05CF	Environmental Studies	2021	<ol style="list-style-type: none"> 1. Articulate the interconnected and interdisciplinary nature of environmental studies. 2. Demonstrate an integrative approach to environmental issues with a focus on sustainability. 3. Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem solving. 4. Communicate complex environmental information to both technical and non-technical audiences. 5. Understand and evaluate the global scale

				of environmental problems and reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.
7	MSCS - 106EF	1. A. PC Hardware Basics	2021	<ol style="list-style-type: none"> 2. Identify the hardware components of a computer. Lists the hardware components such as processor, memory, disk, main board, etc. 3. Explains the features of the hardware components of a computer. Explains the relationships between the components of a computer and how data are transferred among the components. 4. identify the peripheral devices outside computer. Uses computer using input devices, such as keyboard and mouse. 5. Transfers data outside the computer using output devices, such as screen and printer. Saves files to removable devices and loads files from removable devices. 6. Connects to the Internet using network cards. identify the software's running on a computer. Identifies BIOS and changes settings in BIOS.
8	MSCS - 106EF	B. Statistical Methods	2021	<ol style="list-style-type: none"> 1. Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data. 2. Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and

				<p>significance of the correlation coefficient.</p> <ol style="list-style-type: none"> 3. Know the association between the attributes. Know the construction of point and interval estimators. 4. Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation.
9	MSCS -201C	Advanced Data Base Management System	2021	<ol style="list-style-type: none"> 1. Explain and evaluate the fundamental theories for advanced database architectures and query operators. 2. Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database. 3. Assess and apply database functions of distributed database. Evaluate different database designs and architecture. 4. Administer and analyze database with query optimization techniques and develop Web interface with database. 5. Understand advanced querying and decision support system.
10	MSCS -202C	Computer Networks	2021	<ol style="list-style-type: none"> 1. Describe the general principles of data communication. Describe how computer networks are organized with the concept of layered approach. 2. Describe how signals are used to transfer data between nodes. Implement a simple LAN with hubs, bridges and switches. 3. Describe how packets in the Internet are delivered. Analyze the contents in a given data link layer packet, based on the layer concept.

				<ol style="list-style-type: none"> 4. Design logical sub-address blocks with a given address block. Decide routing entries given a simple example of network topology. 5. Describe what classless addressing scheme and how routing protocols work.
11	MSCS -203C	Computer Graphics	2021	<ol style="list-style-type: none"> 1. The course introduces the basic concepts of computer graphics. It provides the necessary theoretical background and demonstrates the application of computer science to graphics. The course further allows students to develop programming skills in computer graphics through programming assignments. 2. Understands the core concepts and mathematical foundations of computer graphics knows fundamental computer graphics algorithms and data structures. 3. Has an overview of different modeling approaches and methods and has detailed knowledge about basic shading and texture mapping techniques. 4. Understands light interaction with 3D scenes.
12	MSCS- 204 GE – A	E- Commerce	2021	<ol style="list-style-type: none"> 1. Understand the basic concepts and technologies used in the field of management information systems. 2. Have the knowledge of the different types of management information systems. Understand the processes of developing and implementing information systems. 3. Be aware of the ethical, social, and security issues of information systems;

13	MSCS- 204 GE B	Accounting And Financial Management	2021	<ol style="list-style-type: none"> 1. Use of Accounting information to managers within the organization. 2. Informs the business decision & control the Management Functions.
14	MSCS- 205CF	Human Rights And Value Education	2021	<ol style="list-style-type: none"> 1. understand the historical growth of the idea of human rights. 2. demonstrate an awareness of the international context of human rights. 3. demonstrate an awareness of the position of human rights in the UK prior to 1998. 4. understand the importance of the Human Rights Act 1998, analyse and evaluate concepts and ideas.
15	MSCS- 206 EF A	Principles Of Management	2021	<ol style="list-style-type: none"> 1. Understand the concepts related to Business. 2. Demonstrate the roles, skills and functions of management. 3. Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. 4. Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.
16	MSCS- 206 EF B	Internet Of Things	2021	<ol style="list-style-type: none"> 1. Able to understand the application areas of IOT. 2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. 3. Able to understand building blocks of Internet of Things and characteristics.
17	MSCS-301C	Data Warehousing and Data Mining	2021	<ol style="list-style-type: none"> 1. Understand the functionality of the

				<p>various data mining and data warehousing component.</p> <ol style="list-style-type: none"> 2. Appreciate the strengths and limitations of various data mining and data warehousing models. 3. Explain the analyzing techniques of various data. 4. Describe different methodologies used in data mining and data ware housing. 5. Compare different approaches of data ware housing and data mining with various technologies.
18	MSCS-302C	Web Technologies	2021	<ol style="list-style-type: none"> 1. Analyze a web page and identify its elements and attributes. 2. Create web pages using XHTML and Cascading Style Sheets. 3. Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas. 4. Build interactive web applications using AJAX.
19	MSCS-303C	Software Engineering	2021	<ol style="list-style-type: none"> 1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC. 2. Develop Systems with low cost and High Performance. And Know about different types of software product types and their process and Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements.

				<ol style="list-style-type: none"> 3. Analyze and translate a specification into a design, and then realize that design and students are able to use modern engineering tools necessary for software project management, time management and software reuse
20	MSCS -304-GE-A	Systems Programming	2021	<ol style="list-style-type: none"> 1. Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text editors, debuggers, interpreters, compilers, operating systems). 2. Ability to use theoretical and applied information in these areas to design system software with realistic constraints. 3. Ability to conduct experiments, gather data, analyze and interpret results for investigating solutions to real life applications with assembly language programming and Unix shell programming. 4. Ability to devise, select, and use modern techniques and tools needed for the design and implementation of system programs.
21	MSCS -304-GE-B	Computer Algorithms	2021	<ol style="list-style-type: none"> 1. Apply design principles and concepts to algorithm design (c) 2. Have the mathematical foundation in analysis of algorithms (a, j) 3. Understand different algorithmic design strategies (j) 4. Analyze the efficiency of algorithms using time and space complexity theory (b)

22	MSCS -304-GE-C	UID Using .Net Technologies	2021	<ol style="list-style-type: none"> 1. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed, or executed remotely. 2. Build all communication on industry standards to ensure that code based on .NET Framework integrates with any other code. 3. Building multi-tier enterprise applications. 4. Client-side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.
23	MSCS -304-GE-D	IT in Forensic Science	2021	<ol style="list-style-type: none"> 1. Approach analysis of evidence without bias. 2. Develop a conceptual understanding of criminal justice system, rules of evidence, legal system. 3. develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation and scientific laboratory procedures can be applied to immediate employment or advanced study.
24	MSCS -304-GE-E	Software Testing	2021	<ol style="list-style-type: none"> 1. Various test processes and continuous quality improvement, Types of errors and fault models. 2. Methods of test generation from requirements. 3. Behavior modeling using UML: Finite state machines (FSM), Test generation from FSM models, Input space modeling

				<p>using combinatorial designs.</p> <ol style="list-style-type: none"> 4. Combinatorial test generation, Test adequacy assessment using: control flow, data flow, and program mutations, The use of various test tools. 5. Application of software testing techniques in commercial environments.
25	MSCS -305 GE-A	Cloud Computing	2021	<ol style="list-style-type: none"> 1. Understand the concepts, characteristics, delivery models and benefits of cloud computing 2. Understand the key security and compliance challenges of cloud computing 3. Understand the key technical and organisational challenges 4. Understand the different characteristics of public, private and hybrid cloud deployment models.
26	MSCS -305 GE-B	Big Data Analytics	2021	<ol style="list-style-type: none"> 1. Understand Big Data and its analytics in the real world, Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. 2. Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm, Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to generate analytics. 3. Implement Big Data Activities using Hive.
27	MSCS -305 GE-C	Artificial Neural Networks	2021	<ol style="list-style-type: none"> 1. Know the main provisions neuro mathematics, Know the main types

				<p>of neural networks;</p> <ol style="list-style-type: none"> 2. Know and apply the methods of training neural networks; 3. Know the application of artificial neural networks; 4. To be able to formalize the problem, to solve it by using a neural network.
28	MSCS -305 GE-D	Cyber Security	2021	<ol style="list-style-type: none"> 1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure. 2. Design, develop, test and evaluate secure software. 3. Develop policies and procedures to manage enterprise security risks. 4. Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training. 5. Interpret and forensically investigate security incidents.
29	MSCS -305 GE-E	Mobile App Development	2021	<ol style="list-style-type: none"> 1. Describe those aspects of mobile programming that make it unique from programming for other platforms, 2. Critique mobile applications on their design pros and cons, 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic and advanced phone features, and 5. Deploy applications to the Android marketplace for distribution.

47. Commerce

M.Com (R)

S. No.	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2021	<ul style="list-style-type: none"> i. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation ii. Impart the ability to find out the cash flows and provide the skills to value goodwill iii. Create awareness about IFRS and segment reporting
2	102.	Financial Management	2021	<ul style="list-style-type: none"> i. Describe meaning, functions and objectives; role of financial manager. ii. Examine investment decision, capital budgeting, techniques of CB and methods of CB. iii. Investigate management of working capital, needs and concepts. iv. Asses financing decision, capital structure and capital theories. v. Design dividend decision and theories of dividend.
3	103.	Business Environment and Policy	2021	<ul style="list-style-type: none"> i. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment. ii. Illustrates economic environment nature and scope and new economic policy. iii. Develop political, legal environment; reasons for state intervention and government business interface. iv. Study the socio cultural environment nature, impact of social responsibility and

				<p>business ethics.</p> <p>v. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2021	<p>i. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>ii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>iii. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2021	<p>i. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>ii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>iii. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
6	106a	Business Communication Skills	2021	<p>i. To understand the basics of process, models and methods of communication.</p> <p>ii. To analyse various types of non-verbal communication skills and to analyse various types of verbal communication skills.</p> <p>iii. To discuss the contents of various written communication tools and to evaluate the protocols for cross-cultural communication across the globe.</p>
7	201	Advanced cost	2021	<p>i. Obtain knowledge on the concept of cost accounting and know how it is</p>

		Accounting		<p>different from financial and management accounting;</p> <ul style="list-style-type: none"> ii. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. iii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. iv. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2021	<ul style="list-style-type: none"> i. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. ii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market. iii. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic Financial Management	2021	<ul style="list-style-type: none"> i. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, ii. Explain Strategic financial management success factors and constraints. iii. Illustrate corporate valuation approaches and guidelines; value based management. iv. Identify financial distress and restructuring; countering financial distress. v. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2021	<ul style="list-style-type: none"> i. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. ii. Gain Knowledge on the historical backdrop of CG in India and the guild lines

				<p>pronounced by various committees for effective practice in India.</p> <p>iii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>iv. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital Management	2021	<p>i. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital</p> <p>ii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>iii. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2021	<p>i. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercial banks in India.</p> <p>ii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications.</p> <p>iii. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2021	<p>i. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>ii. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index.</p> <p>iii. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2021	<p>i. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p>

				<ul style="list-style-type: none"> ii. Study the concept of Responsibility Accounting and its uses and trends. iii. Know the essential parameters for evaluation of divisional performance and the emerging issues today iv. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.
15	303a	Tally with GST Application	2021	<ul style="list-style-type: none"> i. To acquaint oneself with skills to prepare financial statements through Tally ERP. ii. To understand basics of GST system and to know steps involved in generating GSTR reports. iii. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.
16	303c	Tax planning & Management	2021	<ul style="list-style-type: none"> i. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads ii. Acquire the knowledge on tax planning with regard to location iii. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.
17	304	Internal Audit and Standard Audit Practices	2021	<ul style="list-style-type: none"> i. Conceptualise the knowledge in internal control including evaluation techniques. ii. Learn the meaning, features, objectives and advantages of internal audit and ascertain the basis of auditing with information systems by skill enhancement. iii. Illustrate the audit under computerised information system environment along with its internal control.

				<p>iv. Outline and synthesize the reporting and its presentation techniques.</p>
18	305a	Fundamentals of Accounting	2021	<p>i. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>ii. To help the students to acquire the skills of financial statement analysis</p> <p>iii. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2021	<p>i. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions.</p> <p>ii. Prioritise options in financial derivatives and option pricing models.</p> <p>iii. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>iv. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2021	<p>i. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>ii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>iii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>iv. Understand Social cost benefit analysis and methods of SCBA</p> <p>v. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a	Insurance Management	2021	<p>i. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>ii. Acquire knowledge on various types of life insurance policies and the</p>

				<p>terminology relating to the concept of insurance.</p> <p>iii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>iv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>v. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
22	403d	GST and Customs Duty	2021	<p>i. Outline the concepts of GST, its applicability, features and objectives and look into the registration procedures and return types under GST.</p> <p>ii. Exemplify about the supply of goods and services along with valuation.</p> <p>iii. Draft the eligibility for ITC by learning the concepts of ITC.</p> <p>iv. Ascertain customs duty and find out its assessable value.</p>
23	405a	Security Market Operations	2021	<p>i. Learn the basic concepts of Indian securities market.</p> <p>ii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>iii. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensex and NSE indices.</p>

M.Com (A&F)

S. No.	Course Cod	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
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1	101	Accounting Standards & Reporting	2021	<p>iv. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>v. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>vi. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2021	<p>vi. Describe meaning, functions and objectives; role of financial manager.</p> <p>vii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>viii. Investigate management of working capital, needs and concepts.</p> <p>ix. Asses financing decision, capital structure and capital theories.</p> <p>x. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2021	<p>vi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>vii. Illustrates economic environment nature and scope and new economic policy.</p> <p>viii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>ix. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>x. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational Behaviour	2021	<p>iv. Acquire knowledge on the conceptual frame work and emerging issues of OB and Study different theories of personality and motivation</p> <p>v. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>vi. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>

5	105a	Quantitative Techniques for Business Decisions	2021	<ul style="list-style-type: none"> iv. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions. v. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions. vi. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.
6	106a	Business Communication Skills	2021	<ul style="list-style-type: none"> iv. To understand the basics of process, models and methods of communication. v. To analyse various types of non-verbal communication skills and to analyse various types of verbal communication skills. vi. To discuss the contents of various written communication tools and to evaluate the protocols for cross-cultural communication across the globe.
7	201	Advanced cost Accounting	2021	<ul style="list-style-type: none"> v. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting; vi. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits. vii. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets. viii. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2021	<ul style="list-style-type: none"> iv. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market. v. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.

				<ul style="list-style-type: none"> vi. Create plans and understand the metrics for getting finance from venture capital firms.
9	203.	Strategic Financial Management	2021	<ul style="list-style-type: none"> vi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics, vii. Explain Strategic financial management success factors and constraints. viii. Illustrate corporate valuation approaches and guidelines; value based management. ix. Identify financial distress and restructuring; countering financial distress. x. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.
10	204.	Corporate Governance	2021	<ul style="list-style-type: none"> v. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices. vi. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India. vii. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India. viii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.
11	205a	Working Capital Management	2021	<ul style="list-style-type: none"> iv. To impart basic knowledge on working capital concepts and source of WC and to provide the skills to estimate working capital v. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management. vi. To provide the skills of inventory management with different techniques.
12	206a	e-Banking	2021	<ul style="list-style-type: none"> iv. To understand the RBI's financial norms to be followed by commercial banks

		Operations		<p>and to investigate into the roles of various commercial banks in India.</p> <ul style="list-style-type: none"> v. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits of e-banking applications. vi. Categorize the financial frauds in e-banking sector.
13	301	Security Analysis and Portfolio Management	2021	<ul style="list-style-type: none"> iv. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models. v. Illustrate portfolio theory, CAPM, SML and APT models and investigate portfolio evaluation; Sharpe's, Treynor's and Jensen's performance index. vi. Synthesize portfolio revision, need and strategies.
14	302.	Accounting for Managerial Decisions	2021	<ul style="list-style-type: none"> v. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing. vi. Study the concept of Responsibility Accounting and its uses and trends. vii. Know the essential parameters for evaluation of divisional performance and the emerging issues today viii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.
15	303a	Tally with GST Application	2021	<ul style="list-style-type: none"> iv. To acquaint oneself with skills to prepare financial statements through Tally ERP. v. To understand basics of GST system and to know steps involved in generating GSTR reports. vi. To know the metrics in calculation and generation of TDS and service tax

				reports and to acquire skills to create payroll receipts.
16	303c	Tax planning & Management	2021	<ul style="list-style-type: none"> iv. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads v. Acquire the knowledge on tax planning with regard to location vi. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.
17	304	Internal Audit and Standard Audit Practices	2021	<ul style="list-style-type: none"> v. Conceptualise the knowledge in internal control including evaluation techniques. vi. Learn the meaning, features, objectives and advantages of internal audit and ascertain the basis of auditing with information systems by skill enhancement. vii. Illustrate the audit under computerised information system environment along with its internal control. viii. Outline and synthesize the reporting and its presentation techniques.
18	305a	Fundamentals of Accounting	2021	<ul style="list-style-type: none"> iv. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts v. To help the students to acquire the skills of financial statement analysis vi. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.
19	401	Financial Derivatives	2021	<ul style="list-style-type: none"> v. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types, uses and functions. vi. Prioritise options in financial derivatives and option pricing models. vii. Compose swap market futures, types and interest rate; pricing swaps. viii. Synthesize stock index futures, options and trading of stock futures and options.

20	402.	Project Planning & Control	2021	<p>vi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>vii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>viii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>ix. Understand Social cost benefit analysis and methods of SCBA</p> <p>x. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a .	Insurance Management	2021	<p>vi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>vii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>viii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>ix. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>x. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
22	403d .	GST and Customs Duty	2021	<p>v. Outline the concepts of GST, its applicability, features and objectives and look into the registration procedures and return types under GST.</p> <p>vi. Exemplify about the supply of goods and services along with valuation.</p> <p>vii. Draft the eligibility for ITC by learning the concepts of ITC.</p> <p>viii. Ascertain customs duty and find out its assessable value.</p>
23	405a	Security Market Operations	2021	<p>iv. Learn the basic concepts of Indian securities market.</p> <p>v. Explore the areas of secondary markets in special reference to SEBI guidelines</p>

				<p>and exemplify about listing of securities in BSE and NSE.</p> <p>vi. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>
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M.Com (FM)

S. No .	Cou rse Cod e	Title of the Course	Years of Introductio n	Activities/Content with direct bearing on Employability/Entrepreneurship /Skill development
1	101	Accounting Standards & Reporting	2021	<p>vii. Increase the knowledge of students on accounting principles and standards and To enable the students to do inventory valuation</p> <p>viii. Impart the ability to find out the cash flows and provide the skills to value goodwill</p> <p>ix. Create awareness about IFRS and segment reporting</p>
2	102.	Financial Management	2021	<p>xi. Describe meaning, functions and objectives; role of financial manager.</p> <p>xii. Examine investment decision, capital budgeting, techniques of CB and methods of CB.</p> <p>xiii. Investigate management of working capital, needs and concepts.</p> <p>xiv. Asses financing decision, capital structure and capital theories.</p> <p>xv. Design dividend decision and theories of dividend.</p>
3	103.	Business Environment and Policy	2021	<p>xi. Examine business environment, concept, nature and scope; scanning, monitoring, changing dimensions of business environment.</p> <p>xii. Illustrates economic environment nature and scope and new economic policy.</p> <p>xiii. Develop political, legal environment; reasons for state intervention and government business interface.</p> <p>xiv. Study the socio cultural environment nature, impact of social responsibility and business ethics.</p> <p>xv. Interpret global environment; benefits and problems of MNCs and WTO.</p>
4	104.	Organisational	2021	<p>vii. Acquire knowledge on the conceptual frame work and emerging issues of OB</p>

		Behaviour		<p>and Study different theories of personality and motivation</p> <p>viii. Form a clear idea on group dynamics and inculcate the skills to become a leader and Learn about Organizational structures and clear understanding of management of Interpersonal conflicts.</p> <p>ix. Obtain knowledge on Organization dynamics as to organization culture, organizational change and know the significance of OB today.</p>
5	105a	Quantitative Techniques for Business Decisions	2021	<p>vii. Appreciate the use of quantitative techniques, methods of business forecasting and quantitative techniques in business decisions.</p> <p>viii. Formulate F distribution and multiple co-relations co-efficient and study probability and non-probability distributions.</p> <p>ix. Formulate sampling theory, testing of hypothesis and type I and type II errors and Identify linear programming advantages and disadvantages; graphical and simplex method.</p>
6	106a	Business Communication Skills	2021	<p>vii. To understand the basics of process, models and methods of communication.</p> <p>viii. To analyse various types of non-verbal communication skills and to analyse various types of verbal communication skills.</p> <p>ix. To discuss the contents of various written communication tools and to evaluate the protocols for cross-cultural communication across the globe.</p>
7	201	Advanced cost Accounting	2021	<p>ix. Obtain knowledge on the concept of cost accounting and know how it is different from financial and management accounting;</p> <p>x. Understand the features and objectives of process costing and calculation of process losses and Inter-process profits.</p> <p>xi. Know the concept of equivalent production and accounting treatment for joint and by-products and acquire knowledge on budgetary control and preparation of various functional budgets.</p>

				xii. Perceive the significance of ABC in cost ascertainment and control.
8	202.	Financial Markets and Services	2021	<p>vii. To understand the framework of Indian financial system and money market and evaluate the metrics of primary market and secondary capital market.</p> <p>viii. Demonstrate the role of merchant bankers and to analyze the metrics involved in credit rating the financial instruments issued by companies in primary market.</p> <p>ix. Create plans and understand the metrics for getting finance from venture capital firms.</p>
9	203.	Strategic Financial Management	2021	<p>xi. Describe strategic management concept, importance and purpose; strategic planning concept and characteristics,</p> <p>xii. Explain Strategic financial management success factors and constraints.</p> <p>xiii. Illustrate corporate valuation approaches and guidelines; value based management.</p> <p>xiv. Identify financial distress and restructuring; countering financial distress.</p> <p>xv. Justify corporate sickness and financial engineering; fund raising and fund deployment strategies.</p>
10	204.	Corporate Governance	2021	<p>ix. Obtain knowledge on CG Mechanism and emerging issues in CG and Know the genesis of CG in China USA and UK and also the code of the best practices.</p> <p>x. Gain Knowledge on the historical backdrop of CG in India and the guild lines pronounced by various committees for effective practice in India.</p> <p>xi. Discern knowledge on the composition of Board of Directors and Audit Committees and know the role of internal Auditors in India.</p> <p>xii. Understand the CG standards and practices in India with focus on IT and futures of CG in India.</p>
11	205a	Working Capital	2021	vii. To impart basic knowledge on working capital concepts and source of WC and

		Management		<p>to provide the skills to estimate working capital</p> <p>viii. To enables the students familiarise with the cash management techniques and comprehend the concept of receivables and its management.</p> <p>ix. To provide the skills of inventory management with different techniques.</p>
12	206a	e-Banking Operations	2021	<p>vii. To understand the RBI's financial norms to be followed by commercial banks and to investigate into the roles of various commercials banks in India.</p> <p>viii. To analyze the mechanism of offline and online borrowing and lending of funds and familiarize with merits and demerits o e-banking applications.</p> <p>ix. Categorize the financial frauds in e-banking sector.</p>
13	301	Security Analysis and Portfolio Management	2021	<p>vii. Find security analysis, basics of investment and objectives; fundamental analysis and technical analysis and outline valuation of securities, constant growth and multiple growth models.</p> <p>viii. Illustrate portfolio theory, CAPM, SMLand APT models and investigate portfolio evaluation; sharpe's, treynor's and Jensen's performance index.</p> <p>ix. Synthesize portfolio revision, need and strategies.</p>
14	302.	Accounting for Managerial Decisions	2021	<p>ix. Learn the concept of management accounting, cost analysis for pricing decision and different methods of pricing and understand different managerial decisions influencing short and long-term financing.</p> <p>x. Study the concept of Responsibility Accounting and its uses and trends.</p> <p>xi. Know the essential parameters for evaluation of divisional performance and the emerging issues today</p> <p>xii. Obtain comprehensive knowledge on management reporting and reporting practices of Indian corporates.</p>

15	303a	Tally with GST Application	2021	<p>vii. To acquaint oneself with skills to prepare financial statements through Tally ERP.</p> <p>viii. To understand basics of GST system and to know steps involved in generating GSTR reports.</p> <p>ix. To know the metrics in calculation and generation of TDS and service tax reports and to acquire skills to create payroll receipts.</p>
16	303c	Tax planning & Management	2021	<p>vii. To comprehend the basic knowledge about tax concepts and planning and To provide knowledge on sources of income under different heads</p> <p>viii. Acquire the knowledge on tax planning with regard to location</p> <p>ix. To provide the skills of tax planning regard to managerial decisions and create awareness about tax incentive of exports.</p>
17	304	Internal Audit and Standard Audit Practices	2021	<p>ix. Conceptualise the knowledge in internal control including evaluation techniques.</p> <p>x. Learn the meaning, features, objectives and advantages of internal audit and ascertain the basis of auditing with information systems by skill enhancement.</p> <p>xi. Illustrate the audit under computerised information system environment along with its internal control.</p> <p>xii. Outline and synthesize the reporting and its presentation techniques.</p>
18	305a	Fundamentals of Accounting	2021	<p>vii. To provide basic knowledge on accounting and its preparation and enable the students to prepare final accounts</p> <p>viii. To help the students to acquire the skills of financial statement analysis</p> <p>ix. To provide the basic knowledge on cost accounting and develop the student ability to use the tools of management accounting.</p>
19	401	Financial Derivatives	2021	<p>ix. Outline financial derivatives concepts, features and types; traders in financial derivatives markets and identify forwards and future contracts concepts, types,</p>

				<p>uses and functions.</p> <p>x. Prioritise options in financial derivatives and option pricing models.</p> <p>xi. Compose swap market futures, types and interest rate; pricing swaps.</p> <p>xii. Synthesize stock index futures, options and trading of stock futures and options.</p>
20	402.	Project Planning & Control	2021	<p>xi. Define a project and operations of corporate long range planning and phases of capital budgeting.</p> <p>xii. Distinguishes project ideas and technical analysis, project rating index and methods of forecasting.</p> <p>xiii. Illustrates financial analysis project planning, forms of project organization and performance evaluation of project.</p> <p>xiv. Understand Social cost benefit analysis and methods of SCBA</p> <p>xv. Contrast public projects context of Indian projects, approval procedure and guidelines for preparation of feasibility report.</p>
21	403a .	Insurance Management	2021	<p>xi. Perceive the concept of RM, Socio-economic relevance, regulatory framework and latest development in Insurance sector.</p> <p>xii. Acquire knowledge on various types of life insurance policies and the terminology relating to the concept of insurance.</p> <p>xiii. Understand different types of non-life insurance with reference to marine and fire insurance and their progress and claim settlement thereon.</p> <p>xiv. Seek awareness on miscellaneous insurance including health, personal accident crop insurance and practical problems in implementation and claim settlement.</p> <p>xv. Understand different aspects of management of investments of funds by LIC and GIS, Legal restrictions on their investments. Also exhibit the global insurance scenario and future prospects of India insurance.</p>
22	403d .	GST and Customs Duty	2021	<p>ix. Outline the concepts of GST, its applicability, features and objectives and look into the registration procedures and return types under GST.</p> <p>x. Exemplify about the supply of goods and services along with valuation.</p> <p>xi. Draft the eligibility for ITC by learning the concepts of ITC.</p> <p>xii. Ascertain customs duty and find out its assessable value.</p>

23	405a	Security Market Operations	2021	<p>vii. Learn the basic concepts of Indian securities market.</p> <p>viii. Explore the areas of secondary markets in special reference to SEBI guidelines and exemplify about listing of securities in BSE and NSE.</p> <p>ix. Investigate into Indian stock exchanges and Illustrate about stock market with special reference to BSE sensx and NSE indices.</p>
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48. B.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	BP101T	Human Anatomy and Physiology I– Theory	2021	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the structure and functions of the various systems of the human body. 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy. 4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition
2	BP102T	Pharmaceutical Analysis I–Theory	2021	<ol style="list-style-type: none"> 1. It gives knowledge about the fundamental

				<p>methodology to prepare different strength of solutions.</p> <ol style="list-style-type: none"> 2. It facilitate the students to predict the sources of mistakes and errors. 3. It also helps to develop the fundamentals of volumetric analytical skills. 4. It provides the basic knowledge in the principles of electrochemical analytical techniques <p>The student will be provided with the skills to improve by the course content in terms of analytical techniques to perform the estimation of different category drugs.</p>
3	BP104T	Pharmaceutical Inorganic Chemistry– Theory	2021	<ol style="list-style-type: none"> 1.To understand the history and concept of pharmacopoeia and its editions. 2. Knowledge about the sources of impurities and methods to determine the impurities in inorganic pharmaceuticals. 3. Identification of limit tests of different pharmaceutical inorganic compounds. 4. To understand the method to prepare inorganic pharmaceuticals. 5. To justify the medicinal importance of acidifiers, antacids, cathartics and antimicrobial agents as gastrointestinal agents.

				6. To discuss the handling and applications of radiopharmaceuticals
4	BP105T	Communication skills– Theory	2021	<ol style="list-style-type: none"> 1. To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation. 2. To help students overcome stage fear and take questions. 3. To enable the students to become global citizens. 4. This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers. 5. At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and addvalue to the pharmaceutical business.
5	BP106RBT	REMEDIAL BIOLOGY–Theory	2021	<ol style="list-style-type: none"> 1.know the kingdoms of life. 2.know the body fluids, absorption, digestion,

				<p>respiration.</p> <p>3.know the excretory products, neural control, chemical coordination, and human reproduction.</p> <p>4.know the Nutrition in plants and photosynthesis.</p> <p>5.know the respiration in plants, cell, and tissues.</p>
6.	BP106RMT	Remedial Mathematics– Theory	2021	<p>1. This program shall create an awareness about the mathematical problems, to develop an statistical evaluation.</p> <p>2. To adopt skills in identifying and solving problems.</p> <p>3. Know the theory and their application in Pharmacy research</p> <p>4. Solve the different types of problems by applying theory in drug discovery</p>
7.	BP107P	Human Anatomy and Physiology – Practical	2021	<p>1. Differentiate the structures of the various systems of the human body.</p> <p>2. Perform the experiments like blood cell count, hemoglobin content, bleeding and clotting time and various physiological Parameters theoretically and practically.</p> <p>3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system</p>
8.	BP108P	Pharmaceutical Analysis I – Practical	2021	<p>1. This course is designed to perform and get trained to the electro chemical tests like</p>

				<p>potentiometry, complexometry, polarimetry.</p> <p>2. Hands on training on different titrations like complexometric titrations, precipitation titrations, redox titrations.</p> <p>3. Understand the process of limit test and procedures.</p> <p>4. Gain knowledge on the determination of Normality, Molarity, Molality.</p> <p>5. Understand the process how to Prepare the solution and its standardization</p>
9.	BP109P	Pharmaceutics I – Practical	2021	<p>1. This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts of preparing the different conventional dosage forms.</p> <p>2. To understand the different pharmaceutical calculation involved in formulation;</p> <p>3. Practical knowledge on formulation procedure of different dosage forms;</p> <p>4. Highlights the Practical allowance to formulate different types of dosage forms;and</p> <p>Gain Knowledge on criteria to appreciate the good formulation for effectiveness</p>
10.	BP110P	Pharmaceutical Inorganic Chemistry– Practical	2021	<p>1. To recall the sources of limit tests, preparation and identification of compounds.</p> <p>2. To demonstrate the preparation of inorganic pharmaceuticals</p> <p>3. To apply knowledge to perform modified limit tests.</p> <p>4. To analyze various inorganic pharmaceutical</p>

				<p>compounds.</p> <p>5. To select suitable method for the preparation of inorganic pharmaceuticals.</p> <p>6.To assess quality of inorganic pharmaceuticals.</p>
11	BP111P	Communication skills– Practical	2021	<p>1.To equip students with Pre-presentations and to understand the structure of a good presentation and devise various techniques for delivering a successful presentation.</p> <p>2.To help students overcome stage fear and take questions.</p> <p>3.To enable the students to become global citizens.</p> <p>4.This course will prepare the young pharmacy student to interact effectively with doctors, nurses and other health workers.</p> <p>5.At the end of the course the students will get the soft skills set to work cohesively with the team as a team player and add value to the pharmaceutical business.</p>
12	BP112RBP	Remedial biology – Practical	2021	<p>1. How to use microscope, section cutting, mounting, staining, and permanent slide preparation.</p> <p>2. About the cell and its functions.</p>

				<ol style="list-style-type: none"> 3. About the frog with respect to human. 4. About the bone and tissues in humans and plants. 5. About the blood groups, blood pressure and tidal volume
13	BP 201T	Human Anatomy and Physiology-II – Theory	2021	<ol style="list-style-type: none"> 1. Know the gross morphology, structure and functions of various organs of the human body. 2. Perform all the hematological tests with the help of specimens 3. Note all the points regarding the tissues various organs of human body 4. Brief knowledge on clinical significance of various systems in our body. 5. Application of the role of genetics in day to day life.
14	BP202T	Pharmaceutical Organic Chemistry I – Theory	2021	<ol style="list-style-type: none"> 1. Guess and write the structure, systematic/trivial name, and pharmaceutical uses (if any) associated with the specified organic compounds. 2. Understand the general concept of isomerism and distinguish structural isomers. 3. Infer the chemical nature of the compounds on the basis of qualitative chemical tests. 4. Understand the significance of certain electronic effects with respect to the reactivity/ stability of organic compounds specified. 5. Understand and gain insight into the organic

				reactions by analyzing their fair reaction mechanisms.
15	BP203T	Biochemistry – Theory	2021	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the biochemical Pathways of the body 2. understanding the catalytic role of enzymes, importance of enzyme inhibitors 3. Understand the genetic organization of mammalian genome 4. Understand the DNA in the synthesis of RNAs and proteins
16	BP 204T	PATHOPHYSIOLOGYI–Theory	2021	<ol style="list-style-type: none"> 1. Identifies Name the signs, symptoms and complications of the diseases. 2. Students Get thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. 3. To Study the aetiology and pathogenesis of the selected disease states 4. The baseline knowledge required to practice medicine safely, confidently, rationally and

				effectively.
17	BP205T	Computer Applications in Pharmacy – Theory	2021	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
18	BP206T	Environmental Science– Theory	2021	<ol style="list-style-type: none"> 1. This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment. 2 To compare the natural, renewable and non-renewable resources and the problems associated with them. 3 To motivate the learners to participate in environment protection and improvement. 4 To analyze the concepts of eco system including structure and functions. 5 To adopt skills in identifying and solving environmental problems. 6 To develop an attitude of concern for the environment.
19	BP207P	Human Anatomy And Physiology II – (Practical)	2021	<p>This subject is to inculcate the students about the structure and functioning of various systems and to perform hematological tests, body temperature and</p>

				<p>BMI.</p> <ol style="list-style-type: none"> 1. Prepare the charts and tables for easy understanding of various systems and positive & negative feed back mechanism. 2. Awareness on family planning devices and pregnancy diagnosis test. 3. Identify the structural (microscopically and macroscopically) and functional details about different organ systems such as cardiovascular, lymphatic, digestive, muscular system
20	BP208P	Pharmaceutical Organic Chemistry I - Practical	2021	<ol style="list-style-type: none"> 1. Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes. 2. Get hands- on- experience in basic techniques of organic synthesis.
21	BP209P	Biochemistry – Practical	2021	<ol style="list-style-type: none"> 1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch), Proteins (albumin and Casein) 2. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method) 3. Qualitative analysis of urine for abnormal constituents 4. Determination of blood creatinine, blood

				sugar, serum total cholesterol
22	BP210P	Computer Applications in Pharmacy – Practical	2021	<ol style="list-style-type: none"> 1 know the various types of application of computers in pharmacy profession 2. know the various types of databases used in profession 3. know the usage of softwares in pharmacy
23	BP 301 T	Pharmaceutical organic chemistry II (Theory)	2021	<ol style="list-style-type: none"> 1. Guess and writethestructure according to the stereochemical specifications. 2. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity. 3. Assess and understand the pharmaceutical applications and importance of the specified named reactions
24	BP 302 T	Physical Pharmaceutics I (Theory)	2021	The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms
25	BP 303 T	Pharmaceutical Microbiology (Theory)	2021	<ol style="list-style-type: none"> 1. To acquire knowledge on HVAC systems, layout designs, GMP standards sanitation personal hygiene in sterile product manufacturing facilities. 2. To know the various types of sterile products with their formulation in large scale industries. 3. To develop skill for lab scale manufacture of

				few SVPs, LVPs, ophthalmic products with labelling and quality control.
26	BP 304 T	Pharmaceutical Engineering (Theory)	2021	<ol style="list-style-type: none"> 1. To know various unit operations involved in manufacturing of pharmaceuticals. 2. To understand the concepts of flow of fluids, size reduction and size separation. 3 To perform different mechanisms of heat transfer. 4 To compare and contrast different types of evaporation and distillation process. 5 To determine the factors influencing mixing, filtration and centrifugation. 6 To elaborate various preventive methods used for corrosion control in pharmaceutical industries
27	BP 305 P	Pharmaceutical organic chemistry II (Practical)	2021	<ol style="list-style-type: none"> 1.Assess the identity in terms of the physico-chemical properties of the compounds of specified chemical classes. 2.Get hands- on- experience in basic techniques of organic synthesis
28	BP 306 P	Physical Pharmaceutics I (Practical)	2021	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods

29	BP 307 P	Pharmaceutical Microbiology (Practical)	2021	<ol style="list-style-type: none"> 1. Learners gain knowledge on some sterile marketed products along with blood products which are not possible in laboratory and large scale manufacture. 2. To know the skills of aseptic techniques principles of sterilization and validation of aseptic areas. 3. Knowledge on blood products and surgical dressing with their formulation details, production and quality control.
30	BP 308 P	Pharmaceutical Engineering (Practical)	2021	<ol style="list-style-type: none"> 1. To understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying. 2. To demonstrate and explain about the construction, working and applications of pharmaceutical equipment's such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer. 3. To experiment with the process variables of filtration, evaporation and infer the same. 4. To determine radiation constant of brass, iron, unpainted and painted glass.

				<p>5. To determine overall heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation.</p> <p>6. To estimate moisture content, loss on drying and construct drying curves for calcium carbonate and starch</p>
31	BP 401 T	Pharmaceutical organic chemistry III (Theory)	2021	<p>1. Guess and write the structure according to the stereochemical specifications.</p> <p>2. Fairly understand the aspects of heterocyclic chemistry in terms of naming and reactivity.</p> <p>3. Assess and understand the pharmaceutical applications and importance of the specified named reactions.</p>
32	BP 402 T	Medicinal chemistry I (Theory)	2021	<p>1. Fundamental knowledge on the structure, chemistry and therapeutic value of drugs.</p> <p>2. Understand the Structural Activity Relationship (SAR) of drugs.</p> <p>3. Importance of physicochemical properties and metabolism of drugs.</p> <p>4. Chemical synthesis of important drugs under each class.</p>

33	BP 403 T	Physical Pharmaceutics II (Theory)	2021	<p>1. The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations.</p> <p>2. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of</p>
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				pharmaceutical dosage forms
34	BP 404 T	Pharmacology I (Theory)	2021	<ol style="list-style-type: none"> 1. The subject is to impart knowledge about the action of the drug, different routes of drug administration, toxic effects etc. 2. Students would have understood the pharmacological actions of different categories of drugs. 3. Mechanism of drug action at organ system, sub cellular and macromolecular levels have been studied. 4. They have understood the application of basic pharmacological knowledge in the prevention and treatment of different diseases. 5. Signal transduction mechanism of various receptors have been understood
35	BP 405 T	Pharmacognosy And Phytochemistry I (Theory)	2021	<p>This subject is intended to impart students about the fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p> <ol style="list-style-type: none"> 1. Significance of pharmacognostic parameters & study of crude drugs. 2. Understand the underlying reason of evolutionary significance of secondary metabolites production in plants & other organisms & deduce their significance as medicinal molecules. 3. How these primary metabolites are used comprehensively as a source to develop Pharmaceutical & industrial applications.

				Study about the source, name, chemical structures, methods of extraction, qualitative & quantitative analysis of glycosides & tannin.
36	BP 406 P	Medicinal chemistry I (Practical)	2021	<p>This subject is to inculcate the students will able to know</p> <ol style="list-style-type: none"> 1. Basic knowledge on scope of Medicinal chemistry and interlinked subjects 2. Handling the glassware and Preparations of the synthetic drugs and how to calibrate the chemicals. 3. Perform the synthesis of the drugs with their chemical structures. 4. Compare the test drug with that of the standard drug by assay methods. 5. Understand the partition coefficient of any two drugs.
37	BP 407 P	Physical pharmaceutics II (Practical)	2021	This course helps to compare and evaluate the solubility of various combination compound modify for better solubility approaches by use different level of methods

38	BP 408 P	Pharmacology I (Practical)	2021	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. <p>Demonstration of different simulation methods</p>
39	BP 409 P	Pharmacognosy and Phytochemistry (Practical)	2021	<ol style="list-style-type: none"> 1. Demonstrate chemical tests to identify unorganized crude drugs 2. Evaluate the quality and purity of crude drugs 3. Perform linear measurements for crude drug identification
40	BP501T	MEDICINAL CHEMISTRY – II- Theory	2021	<p>This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activityrelationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.</p>
41	BP502T.	Industrial Pharmacy-I- Theory	2021	<p>Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product</p>
41	BP503T.	PHARMACOLOGY-II- Theory	2021	<p>This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs</p>

				acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.
42	BP504T.	PHARMACOGNOSY AND PHYTOCHEMISTRY II- Theory	2021	The main purpose of subject is to impart the students the knowledge of how these secondary metabolites is produced in the crude drugs, how to isolate and identify and produce them industrially. Also, this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine
43	BP505T	PHARMACEUTICAL JURISPRUDENCE- Theory	2021	This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.
44	BP506P.	Industrial Pharmacy-I- Practical	2021	This is help to understand the basic information of formulation process and how to optimise quality control solid, semisolid and parenteral dosage forms
45	BP507P	PHARMACOLOGY-II- Practical	2021	<ol style="list-style-type: none"> 1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc. 3. Evaluate the different activities on animals. 4. Demonstration of different simulation methods. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments.
46	BP508P.	PHARMACOGNOSY AND PHYTOCHEMISTRY II - Practical	2021	To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents by use chromatographic

				technique
47	BP601T.	MEDICINAL CHEMISTRY – III- Theory	2021	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs
48	BP602T.	PHARMACOLOGY-III- Theory	2021	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition, emphasis on the principles of toxicology and chrono pharmacology.
49	BP603T.	HERBAL DRUG TECHNOLOGY- Theory	2021	This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs
50	BP604T.	BIOPHARMACEUTICS AND PHARMACOKINETICS- Theory	2021	This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems raised therein
51	BP605T.	PHARMACEUTICAL	2021	Biotechnology has a long promise to revolutionize the

		BIOTECHNOLOGY - Theory		biological sciences and technology. Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting. Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. Biotechnology has already produced transgenic crops and animals and the future promises lot more. It is basically a research-based subject.
52	BP606T.	PHARMACEUTICAL QUALITY ASSURANCE- Theory	2021	This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs
53	BP607P.	MEDICINAL CHEMISTRY- III- Practical	2021	This course helps to how to separation and identification compound given unknown mixture. It imparts take it knowledge on crude separation and identification technique
54	BP608 P.	PHARMACOLOGY-III- Practical	2021	1. Handling of different instruments used in Experimental Pharmacology. 2. Know about the different routes of drug administration, blood withdrawal etc., 3. Evaluate the different activities on animals. 4. Demonstration of different simulation methods. 5. They would have finally learnt to apply the knowledge of drugs practically using simulated pharmacological experiments
55	BP609P.	HERBAL DRUG TECHNOLOGY-- Practical	2021	This subject gives the student the knowledge of basic understanding of herbal drug formulation and determination of herbal content
56	BP701T	Instrumental Methods of Analysis (Theory)	2021	1) To understand selected instrumental analytical techniques (spectroscopic and chromatographic

				<p>methods) and differentiate with volumetric analysis.</p> <p>2) To gain knowledge on interaction of EMR with matter and to build the analytical understanding at the level of atom, group and molecular structure of organic and inorganic compounds with different functional groups and their applications in pharmacy.</p> <p>3) To maximize knowledge on characterization and estimation of ions by spectroscopical techniques</p> <p>4) To simplify affinity of matter with stationary phase and mobile phase, physical and chemical. This subject is intended to impart students about the fundamental knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially, involved in the study of producing plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.</p>
57	BP702T	Industrial Pharmacy II (Theory)	2021	1. This course is designed to impart knowledge and skills necessary to train the students to be on par

				<p>with the routine of Industrial activities in Production.</p> <ol style="list-style-type: none"> 2. On completion of this course, it is expected that students will be able to understand. 3. Handle the scheduled activities in a pharmaceutical firm. Manage the production of large batches of pharmaceutical formulations
58	BP703T	Pharmacy Practice (Theory)	2021	<ol style="list-style-type: none"> 1. Understand the elements of pharmaceutical care and provide comprehensive patient care services 2. Interpret the laboratory results to aid the clinical diagnosis of various disorders. <p>Provide integrated, critically analysed medicine and poison information to enable healthcare professionals in the efficient patient management</p>
59	BP704T	Novel Drug Delivery System (Theory)	2021	<ol style="list-style-type: none"> 1. This subject is designed to impart basic knowledge on the area of novel drug delivery systems. Upon completion of the course student shall be able 2. To understand various approaches for development of novel drug delivery systems. 3. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

60	BP705P	Instrumental Methods of Analysis (Practical)	2021	<ol style="list-style-type: none"> 1. Discusses the effect of impurities on the quality of drugs and behavioural pattern of drugs 2. Aids in understanding the SOP and usage of software associated with various analytical instruments 3. Helps in gaining knowledge of interpretation of spectra and of chromatograms
61	BP706PS	Practice School	2021	<ol style="list-style-type: none"> 1. Work in team and undertake a project in the area of Pharmacy 2. Present, exhibit and document the project work • Develop a project report 3. Apply concepts of pharmaceutical sciences for executing the project 4. Apply appropriate research methodology while formulating a project 5. Define specifications, synthesize, analyse, develop and evaluate a project
62	BP801T	Biostatistics and Research Methodology (Theory)	2021	<ol style="list-style-type: none"> 1. Develop the ability to apply the methods while working on a research project work 2. Describe the appropriate statistical methods required for a particular research design

				<p>3. Choose the appropriate research design and develop appropriate research hypothesis for a research project</p> <p>4. Develop a appropriate framework for research studies</p>
63	BP802T	Social and Preventive Pharmacy (Theory)	2021	<p>1. After the successful completion of this course, the student shall be able to: Acquire high consciousness/ realization of current issues related to health and pharmaceutical problems within the country and worldwide.</p> <p>2. Have a critical way of thinking based on current healthcare development.</p> <p>Evaluate alternative ways of solving problems related to health and pharmaceutical issues</p>
64	BPH 409	Biopharmaceutics & Pharmacokinetics Practicals	2021	<p>1. Compare the in-vitro drug release profile of different marketed products</p> <p>2. Perform the solubility enhancement techniques for improvement of drug release of poorly water-soluble drugs</p> <p>3. Estimate the bioavailability (absolute and relative) and bioequivalence from the given clinical data</p> <p>4. Calculate the drug content in blood sample using Area Under Curve approach</p> <p>5. Calculate and interpret various pharmacokinetic parameters from the given clinical data</p>

65	BP803ET	Pharma Marketing Management (Theory)	2021	
66	BP804ET	Pharmaceutical Regulatory Science (Theory)	2021	<ol style="list-style-type: none"> 1. Explain the process of drug discovery, development and generic product development 2. Describe the regulatory approval process and registration procedures for API and drug products. 3. Basic understanding of regulations of India with other global regulated markets 4. Understand the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 5. Learn the basic understanding the importance of orange book, Federal Register, Code of Federal Regulatory, and purple book
67	BP805ET	Pharmacovigilance (Theory)	2021	<ol style="list-style-type: none"> 1. Explain the regulatory requirements for conducting clinical trial 2. Describe in detail about various types of clinical trial designs 3. Explain the responsibilities of key players involved in clinical trials 4. Describe the documentational requirements for

				<p>Clinical trials</p> <p>5. Explain Adverse drug reaction and its management</p>
68	BP806ET	Quality Control and Standardization of Herbals (Theory)	2021	<ol style="list-style-type: none"> 1. Explain basic tests for drugs to obtain dosage form for pharmaceutical substances and medicinal plants 2. Explain methods for evaluation of pharmaceutical substances, medicinal plants and commercial crude drugs. 3. Describe guidelines for cGMP, GAP, GMP and GLP for quality assurance of herbal drugs in industry 4. Describe guidelines for quality control of herbal drugs and evaluation of safety and efficacy of herbal medicines. 5. Explain regulatory approval process and their registration in Indian and international markets.
69	BP807ET	Computer Aided Drug Design (Theory)	2021	<ol style="list-style-type: none"> 1. Explain the various stages of drug discovery and learn the concept of bioisosterism. 2. Describe physicochemical Properties and the techniques involved in QSAR 3. Explain various structure-based drug design

				<p>methods (Molecular docking, Denovo drug design)</p> <p>4. Learn the concept of pharmacophore and modelling techniques</p> <p>5. Explain the various techniques in Virtual Screening</p>
70	BP808ET	Cell and Molecular Biology (Theory)	2021	<p>1. It deals with understanding the molecular aspects of the biology.</p> <p>2. It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription.</p> <p>3. It also helps in understanding the concepts of cellular function</p> <p>4. It deals with understanding the molecular aspects of the biology. It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein Synthesis and Reverse transcription.</p> <p>It also helps in understanding the concepts of cellular function</p>

	BP809ET	Cosmetic Science (Theory)	2021	<ol style="list-style-type: none"> 1. Cosmetic Science is an interdisciplinary applied science program providing students with the opportunities to develop professional skills and fundamental concepts driving cosmetic science. 2. Cosmetic Science focuses on the needs of the cosmetic industry and its consumers, in addition to providing students with the critical and evaluative skills to become professional scientists. 3. Cosmetic Science covers a range of sciences, both pure and applied, formulation development and industry operations, all of which give you a broad range of career opportunities.
	BP810ET	Experimental Pharmacology (Theory)	2021	<ol style="list-style-type: none"> 1. Study of commonly used instruments in experimental pharmacology. 2. Introduction to CPCSEA guidelines and OECD guidelines. 3. Introduction to animal physiology with their biochemical reference values in various

				<p>animal species.</p> <p>4. Study of methods for collection of blood, body fluids and urine from experimental animals.</p> <p>5. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).</p>
	BP811ET	Advanced Instrumentation Techniques (Theory)	2021	<p>1. Apply the analytical techniques to study bulk-drug pharmaceuticals, quality control.</p> <p>2. Develop in-depth knowledge and critical awareness of the application of modern.</p> <p>3. Know preparation and standardization of various concentrations of acids and bases.</p> <p>4. Understand the basic concepts involved in electro-analytical techniques and its types.</p> <p>5. Understand theory, principle, types and techniques of coulometric titration</p>
	BP812ET	Dietary Supplements and Nutraceuticals (Theory)	2021	<p>1. Know different Acts and guidelines that regulate Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food &</p>

				<p>Nutraceuticals industry in India.</p> <p>2. Understand the approval process and regulatory requirements.</p> <p>3. Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food& Nutraceuticals</p>
	BP813PW	Project Work	2021	<p>6. Work in team and undertake a project in the area of Pharmacy</p> <p>7. Apply concepts of pharmaceutical sciences for executing the project</p> <p>8. Apply appropriate research methodology while formulating a project</p> <p>9. Define specifications, synthesize, analyse, develop and evaluate a project</p> <p>10. Present, exhibit and document the project work • Develop a project report</p>

M.Pharmacy

S.No	Course Code	Title of the Course	Years of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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1	MPH 101A(Pharmacology)	General & Systemic Pharmacology	2021	<ol style="list-style-type: none"> 6. Describe the instruments in experimental pharmacology. 7. Know CPCSEA guidelines and OECD guidelines. 8. Know animal physiology with their biochemical reference values in various animal species. 9. Do collection of blood, body fluids and urine from experimental animals. 10. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
2	MPH 102A(Pharmacology)	Clinical Pharmacology & Toxicology	2021	<ol style="list-style-type: none"> 1. The pathophysiology of selected disease states and the rationale for drug therapy. 2. The controversies in drug therapy. 3. The importance of preparation of individualized therapeutic plans based on diagnosis. 4. Understanding the concepts of Clinical research;Therapeutic drug monitoring (TDM) ; concepts of Pharmacotherapeutics, Management & Current Good Clinical Practice of various diseases. 5. Studying of various types, mechanisms of Drug interaction; rationale for drug combinations; Drug Toxicity and its prevention; Adverse drug reactions and its monitoring
3	MPH 103	Practical 1	2021	<ol style="list-style-type: none"> 1. Recording of concentration response curve (CRC) of acetylcholine

				<ol style="list-style-type: none"> 2. Record of the CRC of 5-HT on rat fundus preparation. 3. Record of the CRC of histamine on guinea pig ileum 4. Inotropic and chronotropic effects of drugs on isolated frog heart
4	MPH 104	Practical-II(MAT)	2021	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms
5	MPH 105	Modern Analytical Techniques and biostatics Theory	2021	<ol style="list-style-type: none"> 1. Explains the importance of modern instrumentation in pharmaceutical analysis 2. Describes the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR. 3. Discusses the principle and applications of chromatographic techniques 4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms. <p>Explains the concepts of Statistics and their</p>

				applications in pharmacy
6.	MPH 106	Human Values and Professional Ethics-I	2021	<ol style="list-style-type: none"> 1. Awareness of ethical issues and basic ethical approaches. 2. Improved writing skills and understanding of ethical conflict. 3. Enables students to develop ability for moral reasoning and act with ethical deliberations. 4. After studying ethics one is equipped with the ethical sensitivity and moral understanding required to solve complex ethical dilemmas. 5. Learn how to live peacefully
7.	MPH 107	Comprehensive Viva	2021	<ol style="list-style-type: none"> 1. Know the fundamental knowledge on the structure and functions of the various systems of the human body. 2. understanding all the homeostatic mechanisms of the body 3. Understand the relationship of anatomy with various disciplines of pharmacy. 4. Understand the dynamic constancy of the body, cell and its components, tissue and types of tissue, blood and its function and composition
8.	MPH 201A (Pharmacology)	Molecular Pharmacology	2021	<ol style="list-style-type: none"> 1. Explain the modes of action of drug at the cellular level by describing their interactions with target proteins

				<ol style="list-style-type: none"> 2. Explain the receptor signal transduction processes. 3. Explain the molecular pathways affected by drugs. 4. Understanding the applicability of molecular pharmacology and biomarkers in drug discovery process. 5. Outline the molecular features that are responsible for agonist and antagonist binding, and coupling to effector processes, with reference to the nicotinic, muscarinic, and β-adrenergic receptors
9.	MPH 202 A	Methods in Drug Evaluation	2021	<ol style="list-style-type: none"> 1. Know the commonly used instruments in experimental pharmacology. 2. describe the animal physiology with their biochemical reference values in various animal species. 3. Study of methods for collection of blood, body fluids and urine from experimental animals. 4. Record the effect of drug on Concentration Response Curves (CRC) using suitable isolated tissue preparations (Synergism and Antagonism).
10.	MPH 203	Practical 1	2021	<ol style="list-style-type: none"> 1. Calculation of the PA_2 Calculate the PA_2 Value 2. Interpolation bioassay 3. Matching or bracketing bioassay 4. Three point bioassay 5. Four point bioassay

11	MPH 204	Practical-II(BPK)	2021	<ol style="list-style-type: none"> 1. Compare and differentiate between compartmental and non compartmental analysis 2. Identify the physiological, Physicochemical and dosage form related factors that affects drug absorption from different dosage forms 3. Examine the absolute and relative bioavailability of drugs form different dosage forms using either plasma or urine data. 4. Compare the bioequivalence of two drug prodcets
12	MPH 205	BIO-PHARMACEUTICS& PHARMACOKINETICS	2021	<ol style="list-style-type: none"> 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA -BE study protocol for the new drug molecule
13	MPH 206	Human Values and Professional Ethics-II	2021	<ol style="list-style-type: none"> 1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field 2. Learn about morals, values & work ethics.

				<ol style="list-style-type: none"> 3. Develop commitment 4. Learn about the different professional roles. 5. Ethical, social and environmental awareness 6. Professional rights and responsibilities act in morally desirable ways, towards moral commitment and responsible conduct
14	MPH 207	Comprehensive Viva	2021	
15	MPH 301	Mid-Term Evaluation of Research project	2021	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the program. 3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken. 4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups. 5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
16	MPH 401	Project thesis submission & presentation and Project Viva voce	2021	<ol style="list-style-type: none"> 1. Final Year Projects represent the culmination of study towards the Master of Pharmaceutical sciences degree. 2. Projects offer the opportunity to apply and extend material learned throughout the

				<p>program.</p> <ol style="list-style-type: none">3. Assessment is by means of a seminar presentation, submission of a thesis, and a public demonstration of work undertaken.4. In contrast to the majority of courses studied elsewhere in the program, projects are undertaken individually or in small groups.5. This necessarily introduces the dimension of workload management into the program to enable completion of a large, relatively unstructured "assignment" over the course of the semester.
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Name of the Course	Course Code	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document
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CHEMICAL

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	CHBST 102	Chemistry for chemical engineering - i	2018	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
2	MEBET105	ENGINEERING GRAPHIC AND DESIGN	2018	Gains knowledge on first angle projection and third angle projection of drawings.
3	CSBET203	PROGRAMMING FOR PROBLEM SOLVING	2018	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
4	CSBEP206	PROGRAMMING FOR PROBLEM SOLVING	2018	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
5	CHBST204	CHEMISTRY FOR CHEMICAL ENGINEERING 2	2018	In depth understanding of collids,viscosity,surface tention and comon organic reaction and there reaction. Fisher-propsch synthes, amino acids
6	PAMCT 401	Constitution of India	2018	Understand historical background of the constitution making and its importance for building a democratic India and apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
7	HS303C	MANAGERIAL ECONOMICS AND ACCOUNTANCY	2020	UNDERSTAND MACRO ECONOMICS environment of the business and its impact on enterprise.identify various cost elements of the product and its effect on decision making
8	SOC	COMPUTER SKILLS	2020	the study and use of MS WORD,MSEXCEL,POWER POINT AND PERSONAL WORKS
9	SOC	PYTHON PROGRAMMING	2020	understanding the structure,syntax and semantics of the python language.interpert the concept of object-oriented programming as used in python

CIVIL

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAT01	Engineering Mathematics – I	2016	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
	CST01	Computer Programming	2016	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
	CET01	Environmental Studies	2016	To understand Identify and resolve the issues related to sources of different types pollutions and Provide solutions to individuals, individuals, industries and government for sustainable development of natural resources.
	PHT01	Engineering Physics	2016	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
	CYT01	Engineering Chemistry	2016	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
	MET01	Engineering Graphics	2016	Gains knowledge on first angle projection and third angle projection of drawings.
	CSP01	Computer Programming Lab	2016	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
	MEP01	Workshop Practice	2016	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
II Semester				
	MAT02	Engineering Mathematics – II	2017	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.

	CST02	Data Structures	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
	EET01	Basic Electrical Engineering	2017	Understand and analyze basic electric and magnetic circuits and the working principles of electrical machines and power converters..
	ECT01	Basic Electronic Engineering	2017	To understand different types of Electronic devices and working mechanism and have knowledge of amplifiers and oscillators used in day-to-day life.
	CET03	Branch Subject	2017	To understand different types basic Civil engineering techniques and construction activates, different types of foundations and types of structures.
	ENT01	English	2017	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
	CSP02	Data Structures Lab	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
	ENP01	English Communication Lab	2017	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
III Semester				
	MAT03	Engineering Mathematics – III	2017	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
	MET01	Basic Mechanical Engineering	2017	Introduce basics of thermodynamics and components of thermal plant. Identify engineering materials and their properties, manufacturing methods encountered in engineering practice.
	CET04	Engineering Mechanics	2017	To introduce different types of stresses and strains, elastic constants and behaviour of different internal forces under different types of loading.
	CET05	Engineering Geology	2017	In depth understanding of to apply the geological knowledge to Civil Engineering Constructions, at different stages. The kind of study exposes the geological draw backs, if any.
	CET06	Fluid Mechanics And Hydraulic Machines	2017	Introduce the basic principles of fluid mechanics, pressure measuring devices, computation of Hydrostatic forces and characteristics of pumps and turbines.
	CET07	Surveying	2017	Understand the working principles of survey instruments and knowledge on estimating measurement errors and applying corrections.
	CEP01	Surveying Laboratory	2017	Developing skill in handling and using surveying equipment for engineering practice.

	CEP02	Engineering Geology Laboratory	2017	Imparting knowledge identification of minerals, rocks and structures with their utilization in civil engineering works.
IV Semester				
	CET08	Mechanics of Solids	2018	Ability to analyze the stress state of members in tension, Sear torsion and bending and ability to construct the SFD, BMD, TMD Diagrams and to drain their stress diagrams.
	CET09	Applied Hydraulics	2018	To understand the basic concepts of channel flows, specific energy and specific force concepts and to analyze and compute uniform and gradually varied flows, design aspects of erodible and non-erodible channels
	CET10	Soil Mechanics	2018	Identify and classify various soils based on their characteristics and Understand their Engineering properties.
	CET11	Structural Analysis-I	2018	Understand various engineering properties of materials and accordingly analyze the members under torsion, combined torsion and bending moment for determination of energy absorption.
	CET12	Environmental Engineering-I	2018	Estimate the water demand of any area and understand the water conveyance systems and capable of planning and design water treatment plant.
	CET13	Building Planning, Design and Drawing	2018	To understand scope of this course is to introduce the concepts of building planning and drawing with emphasis on architectural planning.
	CEP03	Fluid Mechanics And Hydraulic Machinery Laboratory	2018	Developing skills for handling and using pressure measuring devices, pumps and turbines
	CEP04	Material Testing Laboratory	2018	Develop practical knowledge on finding the properties of different construction materials.
V Semester				
	CET14	Hydrology	2018	To develop IDF and DAD curves for use in the flood estimation and estimate design flood for use in the design of hydraulic structures.
	CET15	Foundation Engineering-I	2018	To build the capability to determine safe bearing capacity and settlement of shallow foundations for different structures
	CET16	Design of R.C.C Structures	2018	To be in a position to design the basic elements of reinforced concrete structures. Such as slab, beam, column and footing which form part of any structural system with reference to Indian standard code.
	CET17	Elective-I	2018	
	CET17-E1	Neural Networks In Civil Engineering	2018	To apply the knowledge of mathematics, science and engineering formulate, solve engineering problems and contemporary issues.
	CET17-E2	Optimization Methods in Civil Engineering	2018	To formulate a problem and based upon different conditions solved by appropriate method.

	CET17-E3	Construction Technology	2018	To know the different types of concretes their application, mix design and tests, develop acquaintance over service requirements like protectives, damp and termite proofing.
	CET17-E4	Air Pollution And Control	2018	To monitor global effects, measures in the protection of environment, advanced concepts of air quality management to design, analyze and develop technologies.
	CET17-E5	Water Power Engineering	2018	To plan and design a power house in surface and subsurface.
	CET17-E6	Noise Pollution And Control	2018	To communicate the sources of noise pollution, professional and ethical responsibilities of an environmental engineer in controlling noise pollution
	CET17-E7	Watershed Management	2018	To perform planning and design of watershed, placing of water harvesting structure and ground water recharge techniques.
	CET18	Design of Steel Structures	2018	Capable of design tension members, compression members, simple bolted and welded connections.
	CET19	Structural Analysis-II	2018	To solve statically indeterminate structures using matrix method, framed structures by using appropriate methods and exact methods
	CEP05	Geotechnical Engineering Laboratory	2018	Capability to find out the index properties of the soil and classification.
	CEP06	Environmental Engineering Laboratory	2018	Capable of performing common environmental experiments relating to water quality and wastewater characteristics and Statistically analyze and interpret laboratory results.
	CEP07	Survey Camp	2018	To apply various surveying principle in solving engineering survey using the survey problems and display team work and leadership capabilities.
VI Semester				
	CET20	Transportation Engineering	2019	Introduced to various components of Railways, Airports and Docks and Harbors and Estimate the traffic requirements from traffic studies.
	CET21	Environmental Engineering-II	2019	To estimate the quantity of waste water generation from any area the impacts of mismanagement of waste water.
	CET22	Elective-2(Open Elective)	2019	
	CET22-OE1	Green Technology	2019	To appreciate and explain the different types of environmental pollution problems and their sustainable solutions and having a broader perspective in thinking for energy efficient practices by utilizing the engineering knowledge.
	CET22-OE2	Disaster Management	2019	To understand knowledge in mitigating various aspects of environmental hazards and management strategies and governmental action plan in mitigation.

	CET23	Quantity Surveying and Valuation	2019	To know about the approximate or detailed estimation of simple buildings, standard specification in building construction and rate analysis of earth work for foundations.
	CET24	Foundation Engineering-II	2019	To find out soil profile in a given location, selected suitable foundation for a given structure and site, to calculation of load carrying capacity of selected soil
	EOT01	Managerial Economics	2019	To estimation of cost production and supply analysis, Profit management with respect to goods.
	COT01	Management Accounting	2019	To understand various principles in finance and preparing a balanced sheet and various methods of analysis in financial statement.
	CEP08	Transportation Engineering Laboratory	2019	Capable of performing various tests for selection of various materials used in Pavement Structures..
	CEP09	Technical Seminar & Presentation Skills	2019	An understanding of professional and ethical responsibility, recognition an ability to engage in life-long learning.
VII Semester				
	CET25	Remote Sensing And GIS	2019	Introduce to RS and GIS concepts and understand ground, air and satellite based sensor platform data and application of various satellite data.
	CET26	Structural Dynamics And Design of Earthquake Resistance Structures	2019	Student able to find the response of the structures subjected to dynamic loading, analysis and design of Earthquake resisting structures.
	CET27	Irrigation & Hydraulic Structures	2019	Student able to calculate the irrigation requirement of crops, understand the components and design concepts of diversion and storage head works.
	CET28	Elective-III	2019	
	CET28-E1	Non Conventional Energy Science	2019	Understand solar energy, its features & its applications, Bio base energy sources like bio mass, bio gas and their application.
	CET28-E2	Environmental Impact Assessment And Environmental Audit	2019	Able to reduce air, water, noise and land pollution using advanced technologies to meet desired needs of society both professionally and ethically.
	CET28-E3	Geo-environmental Engineering	2019	Able to analyze and design waste containment systems to preserve and conserve the environment.
	CET28-E4	Concrete Dams	2019	Able to planning and design of dams and energy dissipaters.
	CET28-E5	Planning And Development of Water Resources Projects	2019	Able to design an optimum water resources project by considering aspects of cost-benefit analysis, flood control and river basin planning.
	CET28-E6	Bridge Engineering	2019	Able to design pipe culverts, box culverts and RCC slab bridges decks.

	CET28-E7	Applied Soil Mechanics	2019	Student learn and able to find out the soil profile in a given location and select suitable foundation for a given structure and site.
	CET28-E8	Urban Hydrology	2019	Able to develop IDF and DAD curves for use in the design of storm water, surface drains and design flood storm water drainage system.
	CET29	Professional Ethics	2019	Understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession and Gained knowledge to develop some ideas of the legal and practical aspects of their profession.
	MAT04	Numerical Methods	2019	Able to develop analytical skills for the problems involving differential equations.
	CEP10	Concrete Technology Laboratory	2019	Able to find the quality of materials used in concrete and the properties of hardened concrete.
	CEP11	CAD Laboratory	2019	Able to apply computer aided design techniques to complete all phases to top-down civil engineering design problems and software techniques to prepare and deliver written and drawing.
VIII Semester				
	CEP12	Project Work	2020	Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies
	CEP13	Mini Project/ Internship	2020	To enable the students to work in convenient group, capable for doing a project involving theoretical and experimental studies.
	CET30	Elective-4(MOOCs)	2020	
	CET31	Construction Planning and Project Management	2020	Able to find compute and sketch CPM and PERT diagram and sketch scheduling of construction activities in construction industry.
	CEP14	GIS Lab	2020	Ability to handle spatial data in GIS environment and data management of spatial data for solution of engineering projects.

R-18

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
1. 1	MABST 101	Mathematics – I	2018	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2.	CYBST 102	Engineering Chemistry	2018	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.

3.	ENHST 103	English	2018	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
4.	EEEST 104	Basic Electrical & Electronics Engineering	2018	Understand and analyze basic electric and magnetic circuits and the working principles of electrical machines and power converters.
5.	MEEST 105	Engineering Graphics & Design	2018	Gains knowledge on first angle projection and third angle projection of drawings.
6.	ENHSP 106	English Communication Lab	2018	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
7.	II Semester			
8.	MABST 201	Mathematics – II	2019	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
9.	PYBST 202	Engineering Physics	2019	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
10.	CSEST 203	Programming for Problem solving	2019	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
11.	CEEST 204	Engineering Mechanics	2019	To introduce different types of stresses and strains, elastic constants and behaviour of different internal forces under different types of loading.
12.	MEESP 205	Workshop/Manufacturing Practices	2019	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
13.	CSESP 206	Computer Programming Lab	2019	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language).
14.	CEMCT 207	Environmental Science	2019	Introducing diverse components of environment and natural resources ecosystem and biodiversity and its conservation methods, population growth and human health green technology.
15.	III Semester			
16.	MABST 301	Mathematics – III	2019	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
17.	CEPCT 302	Strength of Materials	2019	Introducing the concept of the Shear force and bending moment diagrams and Computation of flexural stresses
18.	CEPCT 303	Surveying	2019	Understand the working principles of survey instruments and knowledge on estimating measurement errors and applying corrections.
19.	CEPCT 304	Building Materials and Construction Technology	2019	Introduction of masonry materials for construction, different types construction practices and usage of civil engineering construction equipment.

20.	MEEST 305	Basic Mechanical Engineering	2019	Introduce basics of thermodynamics and components of thermal plant. Identify engineering materials and their properties, manufacturing methods encountered in engineering practice.
21.	CEPCT 306	Engineering Geology	2019	In depth understanding of to apply the geological knowledge to Civil Engineering Constructions, at different stages. The kind of study exposes the geological draw backs, if any.
22.	CEPCP 307	Surveying Lab	2019	Developing skill in handling and using surveying equipment for engineering practice.
23.	CEPCP 308	Engineering Geology Lab	2019	Imparting knowledge identification of minerals, rocks and structures with their utilization in civil engineering works.
24.	IV Semester			
25.	PAMCT 401	Constitution of India	2020	Understand historical background of the constitution making and its importance for building a democratic India and apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
26.	MABST 402	Mathematics – IV	2020	Apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations and apply discrete and continuous probability distributions
27.	CEPCT 403	Fluid Mechanics and Hydraulic Machines	2020	Introduce the basic principles of fluid mechanics, pressure measuring devices, computation of Hydrostatic forces and characteristics of pumps and turbines.
28.	CEPCT 404	Structural Analysis	2020	Understand various engineering properties of materials and accordingly analyze the members under torsion, combined torsion and bending moment for determination of energy absorption.
29.	CEPCT 405	Environmental Engineering	2020	Estimate the water demand of any area and understand the water conveyance systems and capable of planning and design water treatment plant.
30.	CEPCT 406	Soil Mechanics	2020	Identify and classify various soils based on their characteristics and Understand their Engineering properties.
31.	CEPCD 407	Computer aided Building Drawing	2020	Capable of Drawing building plans using Computer Aided Design and Drafting software's incorporating details and design parameters in 2D & 3D.
32.	CEPCP 408	Fluid Mechanics and Hydraulic Machines Lab	2020	Developing skills for handling and using pressure measuring devices, pumps and turbines
33.	CEESP 409	Materials Testing Lab	2020	Develop practical knowledge on finding the properties of different construction materials.
34.	V Semester			
35.	CEPCT 501	Hydraulic Engineering	2020	Understand the concept of dimensional analysis and analyze and uniform and gradually varied flows.
36.	CEPET 502	(Programme Elective – I)	2020	

37.	CEPET 502-PE1	Advanced Environmental Engineering	2020	Capable of estimating the quantity of waste water generation from any area and design sanitary sewers for house plumbing system.
38.	CEPCT 503	Foundation Engineering	2020	To build the capability to determine safe bearing capacity and settlement of shallow foundations for different structures
39.	CEPET 504	Remote Sensing And GIS (Programme Elective – II)	2020	Introduce to RS and GIS concepts and understand ground, air and satellite based sensor platform data and application of various satellite data.
40.	CEPCT 505	Reinforced Concrete Design	2020	Develop ability to analyze and design reinforced concrete flexural members and compression members.
41.	CEPCT 506	Design of Steel Structures	2020	Capable of design tension members, compression members, simple bolted and welded connections.
42.	CEPCP 507	Hydraulic Engineering Lab	2020	Improve capability for computing losses in pipe flow determine characteristics of gradually varied flow and hydraulic jump.
43.	CEPCP 508	Soil Mechanics Lab	2020	Capability to find out the index properties of the soil and classification.
44.	VI Semester			
45.	CEPCT 601	Hydrology and Water Resources Engineering	2021	Understand the concept of runoff analysis and groundwater and design different hydraulic structures components.
46.	CEPCT 602	Transportation Engineering	2021	Introduced to various components of Railways, Airports and Docks and Harbors and Estimate the traffic requirements from traffic studies.
47.	CEOET 603-PE3	Concrete Technology (Programme Elective – III)	2021	Understand various ingredients of concrete and their role and gained knowledge on the fresh and hardened properties of concrete.
48.	CEPET 604-PE4	Advanced Foundation Engineering (Programme Elective– IV)	2021	Students will understand soil exploration methods and impart knowledge on components and design of well foundation.
49.	CEPET 605	Open Elective – I (Moocs)	2021	

50.	CEPCP 606	Environmental Engineering Lab	2021	Capable of performing common environmental experiments relating to water quality and wastewater characteristics and Statistically analyze and interpret laboratory results.
51.	CEPCP 607	Transportation Engineering Lab	2021	Capable of performing various tests for selection of various materials used in Pavement Structures.
52.	MGHST 608	Management(Organizational Behaviour)	2021	Understand the Nature of Management and understand the Social Responsibilities of business.
53.	VII Semester			
54.	CEPCT 701	Estimation & Costing	2021	Understand the basics, methods and types of estimation and To understand the formulate specifications and tender documents.
55.	CEPET 703	Watershed Management (Programme Elective – V)	2021	Introduce to different soil conservation equation and principles and To understand about water harvesting techniques and artificial recharge techniques.
56.	CEHST 704	Professional Practice, Law & Ethics	2021	Understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession and Gained knowledge to develop some ideas of the legal and practical aspects of their profession.
57.	CEPCI 705	Industry Internship	2021	Acquire practical knowledge and carrying out civil engineering works in the field.
58.	CEPCX 706	Project Work - Phase I	2021	Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies.
59.	VIII Semester			
60.	CEOET 801	Open Elective – III (MOOCS)	2022	
61.	CEPET 802	Pre Stressed Concrete (Programme Elective –VI)	2022	Understand the concepts of pre-stressing and methods of pre-stressing and design PSC beams under flexure and shear.
62.	CEPCX 803	Project Work - Phase II	2022	Capability to work in convenient group and doing a project involving theoretical and experimental studies

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S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				

1.	MA 101	Mathematics – I	2020	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2.	CY 101(2)	Engineering Chemistry	2020	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
3.	EN103	English	2020	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
4.	EE 104	Basic Electrical & Electronics Engineering	2020	Understand and analyze basic electric and magnetic circuits and the working principles of electrical machines and power converters.
5.	ME 105	Engineering Graphics & Design	2020	Gains knowledge on first angle projection and third angle projection of drawings.
6.	EN 106	English Communication Lab	2020	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
7.	II Semester			
8.	MA 201	Mathematics – II	2021	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
9.	PY 202	Engineering Physics	2021	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
10.	CS 203	Programming for Problem solving	2021	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
11.	CE 204	Engineering Mechanics	2021	To introduce different types of stresses and strains, elastic constants and behaviour of different internal forces under different types of loading.
12.	ME 205	Workshop/Manufacturing Practices	2021	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
13.	CS 206	Programming for Problem solving Lab	2021	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
14.	CE 207	Environmental Science	2021	Introducing diverse components of environment and natural resources ecosystem and biodiversity and its conservation methods, population growth and human health green technology.
15.	III Semester			
16.	MA301BS	Mathematics – III(<i>Common to all branches</i>)	2021	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.

17.	CE302C	Strength of Materials	2021	Introducing the concept of the Shear force and bending moment diagrams and Computation of flexural stresses.
18.	HS303CO	Managerial Economics and Accountancy (Common to all branches)	2021	Understand Macro Economic environment of the business and its impact on enterprise and to Understand the concepts of financial management and smart investment.
19.	CE304C	Surveying	2021	Understand the working principles of survey instruments and knowledge on estimating measurement errors and applying corrections.
20.	CE305C	Building Materials and Construction Technology	2021	Introduction of masonry materials for construction, different types construction practices and usage of civil engineering construction equipment.
21.	CE306C	Engineering Geology	2021	In depth understanding of to apply the geological knowledge to Civil Engineering Constructions, at different stages. The kind of study exposes the geological draw backs, if any.
22.	CE 307P	Surveying Lab	2021	Developing skill in handling and using surveying equipment for engineering practice.
23.	CE 308P	Engineering Geology Lab	2021	Imparting knowledge identification of minerals, rocks and structures with their utilization in civil engineering works
24.	CEESP409	Materials Testing Lab	2021	Gains knowledge and behavior in finding the properties of different materials.
25.	PA310A	Constitution of India(Common to all branches)	2021	Understand historical background of the constitution making and its importance for building a democratic India and apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy
26.	MC411B	NCC/NSS	2021	
27.	IV Semester			
28.	MA401C	Probability & Statistics (Common to all branches)	2022	To impart knowledge in basic concepts and few techniques in probability and statistics in relation to the engineering applications and Apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations
29.	CE402C	Concrete Technology and Construction Equipment	2022	Understand various ingredients of concrete and their role and gained knowledge on the fresh and hardened properties of concrete
30.	CE403C	Fluid Mechanics and Hydraulic Machines	2022	Introduce the basic principles of fluid mechanics, pressure measuring devices, computation of Hydrostatic forces and characteristics of pumps and turbines.
31.	CE404C	Structural Analysis	2022	Understand various engineering properties of materials and accordingly analyze the members under torsion, combined torsion and bending moment for determination of energy absorption.

32.	CE405C	Environmental Engg. -1	2022	Estimate the water demand of any area and understand the water conveyance systems and capable of planning and design water treatment plant.
33.	CE406C	Soil Mechanics	2022	Identify and classify various soils based on their characteristics and Understand their Engineering properties.
34.	CE407P	Fluid Mechanics and Hydraulic Machines Lab	2022	Developing skills for handling and using pressure measuring devices, pumps and turbines
35.	CE405C	Water Quality and Treatment	2022	Student will able to estimate the water demand of any area und understand the water sources and its quality, to solve the distribution network problems.
36.	CE410P	Computer Aided Building Drawing	2022	Understand the Draw building plans using Computer Aided Design and Drafting software's and Develop engineering project drawings incorporating details and design parameters in 2D & 3D.
37.	MC411B	NCC/NSS	2022	

ECE

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAT01	Engineering Mathematics- I	2016	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
	CST01	Computer Programming	2016	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language).Explain the ideas implement searching and sorting algorithms.
	CET01	Environmental Studies	2016	To understand Identify and resolve the issues related to sources of different types pollutions and Provide solutions to individuals, individuals, industries and government for sustainable development of natural resources.
	CET02	Basic Civil Engineering	2016	
	MET02	Basic Mechanical Engineering	2016	Introduce basics of thermodynamics and components of thermal plant. Identify engineering materials and their properties, manufacturing methods encountered in engineering practice.
	ENT01	English	2016	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
	CSP01	Computer Programming Lab	2016	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language).Explain the ideas implement searching and sorting algorithms.

	ENP01	English Communication Lab	2016	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
II Semester				
	MAT02	Engineering Mathematics II	2017	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
	CST02	Data structures	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
	PHY01	Engineering Physics	2017	Aquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
	CYT01	Engineering Chemistry	2017	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
	EET02	Circuit theory	2017	learn the network theorems and its applications And understand transient analysis,, Analog filter design
	MET01	Engineering Graphics	2017	Gains knowledge on first angle projection and third angle projection of drawings.
	CSP02	Data Structures Lab	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
	MEP01	Workshop practice	2017	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
III Semester				
	MAT03	Engineering Mathematics – III	2017	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
	EET03	Network Analysis	2017	Determine different network functions and Appreciate the frequency domain techniques
	ECT02	Electronic Devices	2017	the principle of operation of Rectifiers, Bipolar Junction Transistors, Field Effect Transistors and optoelectronic Devices
	ECT03	Signals & Systems	2017	create a foundation in signals and systems which will facilitate better understanding of higher level subjects like signal processing, control systems, communication systems
	ECT04	Electromagnetic Fields & Waves	2017	analyze Electrostatic fields and its applications in ECG,EEG etc.and find energy stored in electric field and find resistance and capacitance.

	EET41	Electrical Technology	2017	analyze operation of single phase & three phase induction motors And understand functioning of alternators & various Electrical instruments
	EEP41	Electrical Circuits and Machines Lab	2017	different software's which are used for simulation of electrical networks and about applications of different theorems.
	ECP01	MATLAB and Simulation Lab	2017	practice MATLAB commands and emphasis on creating and accessing data in variables, mathematical and statistical calculations with vectors and creating basics visualizations
IV Semester				
	ECT05	Electronic Circuits Analysis	2018	analyze, design, simulate and build amplifier circuits, and measure their properties. Design and produce small signal amplifier circuits for various practical applications
	ECT06	Pulse and Digital Circuits	2018	basic principles involved in generation and processing of pulse waveforms and design different multivibrators using BJT's, JFET's, MOSFET's and CMOS.
	ECT07	Switching Theory and Logic Design	2018	apply principles of Boolean algebra to manipulate and minimize logic expression and use K-maps and tabular method to minimize logic functions
	ECT08	Random Signals and Stochastic Process	2018	Able to evaluate probability for different experiments and obtain Distribution function, Density functions, and Conditional density functions for different Random variables.
	ECT09	Analog Communication	2018	Helps to understand the applications of different communication in day to day life
	ECT10	Transmission line and waveguides	2018	Understand Primary ,Secondary Constants and equivalent circuit of Transmission line. Derive Transmission line equations and also Propagation constant Characteristics implements
	EET42	Control Systems	2018	learn signal flow graphs and mason's gain formula. Understand the transfer function of electrical, mechanical and electro – mechanical elements through mathematical modeling
	ECP02	Electronic Circuits Analysis Lab	2018	design and analyze the voltage amplifiers and calculate the efficiency of class – A power amplifiers
	ECP03	Analog Communication Lab	2018	the Signal modulation i.e. amplitude, frequency and pulse modulation techniques and Effect of noise on various analog systems and also calculate signal-to-noise ratio
V Semester				
	EOT01	Economics	2018	Introduce to managerial Economics, Cost Analysis Production and Supply Analysis and gain Knowledge in Price and Output Decisions Under Different Market Structures
	AOT01	Accountancy	2018	Understand Macro Economic environment of the business and its impact on enterprise and to Understand the concepts of financial management and smart investment.

	ECT11	Analog IC Applications	2018	understand various modes of operation of an operational amplifier and the linear and non-linear applications of operational amplifiers
	ECT12	Antennas and Wave Propagation	2018	demonstrate basic understanding of the radiation of electromagnetic waves by antennas and develop expressions for antenna parameters and make practical calculations
	ECT13	Electronic Measurements and Instrumentation	2018	Demonstrate the importance of various errors in the measurement process. design of various devices like DC Ammeter and DC voltmeters using PMMC, ohmmeters.
	ECT14	Digital Communication	2018	theoretical aspects of digital communication system, useful for today's multi disciplinary applications. Learn the elements of digital communications systems, fundamental concepts of sampling theorem, quantization and coding.
	ECT15	Computer Organization	2018	describe the basic structure and fundamentals of computer and develop the RTL, Micro operations and micro programmed control
	ECP04	Digital Circuits Lab	2018	differentiate liner and non-linear wave shaping and Able to design logic gates and flip-flops
	ECP05	Digital Communication Lab	2018	Digital communication System and able to analyse the different Digital modulation techniques and Understand the concepts of baseband digital modulation schemes and Inter Symbol Interference
	ECP06	Electronic Measurements Lab	2018	The features of Electronics instrumentation are familiarized and Different types of meters for calculation of unknown parameters like inductances, Resistances and Capacitance are studied.
VI Semester				
	MET43	Management Science	2019	Presenting ideas more effectively and efficiently in formal and informal ways and Development of fundamental rethinking and radical redesign in the organizations
	ECT16	Digital IC Design Applications	2019	This course will help in designing the Digital ICs which is the most requirement in today's market
	ECT17	VLSI Design	2019	This course will help in designing the modern electronic which is the most requirement in today's market
	ECT18	Microprocessors and Interfacing	2019	communication in between microprocessor based systems and peripherals Develop the digital systems to perform real time applications by using microcontrollers
	ECT19	Microwave Techniques	2019	design and construct experiments as well as to analyze and interpret the data of microwave experiments and design mw transmitter And receiver system to meet desired needs within constraints such as economic, environmental, social, political, ethical and safety.
	ECT20	Digital Signal Processing	2019	Analyze and process signals in the discrete domain and Design filters to suit specific requirements for specific applications

	EC-OE01/ EC-OE02	Elective -I (Open Elective)	2019	
	ECP07	IC Applications Lab	2019	design precision rectifiers, compare precision half wave and full wave rectifiers and implement R-2R and weighted type DAC
	ECP08	VLSI Lab	2019	design circuits such as Half Adder, half subtractor ,and decoder, multiplexer using xylinx software
VII Semester				
	ECT21	Radar Engineering	2019	Should have the knowledge on principles and working of various radar systems and should be able to analyze various electronic equipments required for designing a radar depending upon the requirement. Expected to analyse the functioning of the radar system in reallife.
	ECT22	Optical Communication	2019	Classify fibers as single-mode, multimode step index and multi-mode graded index. Describe modes in multimode fibers and mode field parameter in single-mode fibers.
	ECT23	Mobile Communication	2019	Helps in provide connectivity among the people through mobile networks.
	ECT24	Communication Networks	2019	introduction to networking technologies and understand fundamentals underlying the principles of computer networking and functionality of layered network architecture.
	ECT25	Elective-II (Dept Elective)	2019	
	ECP09	Microprocessors and Interfacing Lab	2019	develop the microprocessor based programs for various applications. To make the interfacing in between microprocessor and various peripherals
	ECP10	Microwave and Optical Communication Lab	2019	know the klystron oscillator and Gunn diode oscillation characteristics. have the knowledge of probe, loop slotted line etc.,
	ECP11	DSP Lab	2019	Should able to find the convolution of sequence. Able to design IIR and FIR filter
VIII Semester				
	ECT26	Elective III (Discipline: e_ Learning)	2020	
	ECT27	Elective IV (MOOCs)	2020	Helps to understand how to protect internet connected systems data from cyber threats.
	ECP12	Mini Project / Internship	2020	To enable the students to work in convenient group, capable for doing a project involving theoretical and experimental studies.
	ECP13	Project Work	2020	Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
1. 1	MABST 101	Mathematics–I	2018	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2.	CSEST 103	Programming for Problem Solving	2018	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
3.	ECEST 104	Electronic Devices	2018	the principle of operation of Rectifiers, Bipolar Junction Transistors, Field Effect Transistors and optoelectronic Devices
4.	MEESP 105	Workshop/Manufacturing Practices	2018	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
5.	CSESP 106	Programming for Problem Solving Lab	2018	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
6.	CEACT 107	Environmental Science	2018	To understand Identify and resolve the issues related to sources of different types pollutions and Provide solutions to individuals, individuals, industries and government for sustainable development of natural resources.
II Semester				
7.	MABST 201	Mathematics–II	2019	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
8.	CYBST 202	Engineering Chemistry	2019	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
9.	HSENT 203	English	2019	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
10.	EEEST 204	Basic Electrical Engineering	2019	learn the network theorems and its applications And understand transient analysis., Analog filter design
11.	MEEST 205	Engineering Graphics & Design	2019	Gains knowledge on first angle projection and third angle projection of drawings.
12.	HSENP 206	English Communications Lab	2019	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
III Semester				

13.	MABST301	Mathematics-III	2019	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
14.	EEPCT302	Network Theory	2019	Determine different network functions and Appreciate the frequency domain techniques
15.	ECPCT303	Electromagnetic Waves	2019	analyze Electrostatic fields and its applications in ECG,EEG etc.and find energy stored in electric field and find resistance and capacitance.
16.	ECPCT304	Digital System Design	2019	apply principles of Boolean algebra to manipulate and minimize logic expression and use K-maps and tabular method to minimize logic functions
17.	HSMCT305	Economics	2019	Introduce to managerial Economics, Cost Analysis Production and Supply Analysis and gain Knowledge in Price and Output Decisions Under Different Market Structures
18.	HSMCT306	Accountancy	2019	Understand Macro Economic environment of the business and its impact on enterprise and to Understand the concepts of financial management and smart investment.
19.	ECPCP307	Electronic Devices Lab	2019	Should be able to design and analyze the voltage amplifiers. Should be able to determine the load regulation and line regulation for the voltage regulators
20.	ECPCP308	Digital System Design Lab	2019	Provides introduction to logic designs and the basic building blocks used in digital systems.To understand the number systems and codes, Boolean algebra, and logic gates.
21.	EEESP 309	Basic Electrical Engineering Lab		different software's which are used for simulation of electrical networks and about applications of different theorems.
22.	HSACT310	Constitution of India		Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
IV Semester				
23.	ECPCT401	Analog Circuits	2020	analyze, design, simulate and build amplifier circuits, and measure their properties. Design and produce small signal amplifier circuits for various practical applications.

24.	ECPCT402	Signals and Systems	2020	create a foundation in signals and systems which will facilitate better understanding of higher level subjects like signal processing, control systems, communication systems
25.	ECPCT403	Probability Theory and Stochastic Processes	2020	Able to evaluate probability for different experiments and obtain Distribution function, Density functions, and Conditional density functions for different Random variables.
26.	ECPCT404	Analog and Digital Communication	2020	Helps to understand the applications of different communication in day to day life
27.	CSPCT405	Computer Organization and Architecture	2020	describe the basic structure and fundamentals of computer and develop the RTL, Micro operations and micro programmed control
28.	HSMCT406	Management Science	2020	Presenting ideas more effectively and efficiently in formal and informal ways and Development of fundamental rethinking and radical redesign in the organizations
29.	HSMCT407	Psychology	2020	
30.	ECPCP408	Analog Circuits Lab	2020	design and analyze the voltage amplifiers and calculate the efficiency of class – A power amplifiers
31.	ECPCP409	Analog and Digital Communication Lab	2020	the Signal modulation i.e. amplitude, frequency and pulse modulation techniques and Effect of noise on various analog systems and also calculate signal-to-noise ratio, Digital communication System and able to analyse the different Digital modulation techniques and Understand the concepts of baseband digital modulation schemes and Inter Symbol Interference
V Semester				
32.	EEPCT501	Linear Control Systems	2020	learn signal flow graphs and mason's gain formula. Understand the transfer function of electrical, mechanical and electro – mechanical elements through mathematical modeling
33.	ECPCT502	IC Applications		understand various modes of operation of an operational amplifier and the linear and non-linear applications of operational amplifiers
34.	ECPCT503	Microcontrollers	2020	Develop the digital systems to perform real time applications by using microcontrollers
35.	ECPCT504	Digital Signal Processing	2020	Analyze and process signals in the discrete domain and Design filters to suit specific requirements for specific applications
36.	ECPET505	Electronic Measurements	2020	Demonstrate the importance of various errors in the measurement process. design of various devices like DC Ammeter and DC voltmeters using PMMC, ohmmeters.
37.	ECOET506	Open Elective - I	2020	
38.	ECOET507	Open Elective-II (MOOCs)	2020	

39.	ECPCP508	IC Applications Lab	2020	differentiate liner and non-linear wave shaping and Able to design logic gates and flip-flops
40.	ECPCP509	Microcontrollers Lab	2020	develop the microcontroller based programs for various applications. To make the interfacing in between microcontroller and various peripherals
41.	ECPCP510	Digital Signal Processing Lab	2020	Should able to find the convolution of sequence. Able to design IIR and FIR filter
VI Semester				
42.	ECPCT601	Computer Networks	2021	introduction to networking technologies and understand fundamentals underlying the principles of computer networking and functionality of layered network architecture
43.	ECPET602	Program Elective - I	2021	
44.	ECPET603	Program Elective – II (MOOCs / e_Learning)	2021	
45.	ECOET604	Open Elective-III	2021	
46.	ECOET605	Open Elective-IV	2021	
47.	ECPCP606	Computer Networks Lab	2021	
48.	ECPCP607	Electromagnetic Waves and Microwaves Lab	2021	
49.	ECPCP608	Electronic Measurements Lab	2021	Design and validate DC and AC bridges Analyze the dynamic response and the calibration of few instruments. Learn about various measurement devices, their characteristics, their operation and their limitations
50.	ECPXP609	Electronic Design Workshop / Mini Project	2021	Conceive a problem statement either from rigorous literature survey or from the requirements raised from need analysis. Design, implement and test the prototype/algorithm in order to solve the conceived problem.
51.	VIII Semester			
52.	ECPET701	Program Elective-III	2021	
53.	ECPET702	Program Elective - IV	2021	
54.	ECPET703	Program Elective - V	2021	
55.	HSMCT704	Total Quality Management	2021	Upon completion of this course, the students will be able to use the tools and techniques of TQM in manufacturing and service sectors.

56.	ECPCI705	Summer Industry Internship / Mini Project	2021	To enable the students to work in convenient group, capable for doing a project involving theoretical and experimental studies.
57.	ECPXP706	Project - I		Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies
58.	VIII Semester			
59.	ECPET801	Program Elective - VI	2022	
60.	ECPET802	Program Elective - VII	2022	
61.	ECPXP803	Project – II	2022	Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies

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S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
1. 1	MA101	Mathematics – I	MA101	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2.	PY 102	Modern Physics	PY 102	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
3.	CS 103	Programming for Problem Solving	CS 103	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
4.	EC 104	Electronic Devices	EC 104	the principle of operation of Rectifiers, Bipolar Junction Transistors, Field Effect Transistors and optoelectronic Devices
5.	ME 105	Workshop Manufacturing Practices	ME 105	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials
6.	CS 106	Programming for Problem Solving Lab	CS 106	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.
7.	CE 107	Environmental Science	CE 107	To understand Identify and resolve the issues related to sources of different types pollutions and Provide solutions to individuals, individuals, industries and government for sustainable development of natural resources.
II Semester				

8.	MA201	Mathematics – II	MA201	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
9.	CY 202	Engineering Chemistry	CY 202	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
10.	EN 203	English	EN 203	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.
11.	EE 205	Basic Electrical Engineering	EE 205	learn the network theorems and its applications And understand transient analysis,, Analog filter design
12.	ME 205	Engineering Graphics and Design	ME 205	Gains knowledge on first angle projection and third angle projection of drawings.
13.	EN206	English Communication Lab	EN206	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
III Semester				
14.	MA301B	Mathematics – III	MA301B	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
15.	EC302C	Network Theory	EC302C	Determine different network functions and Appreciate the frequency domain techniques
16.	EC303C	Signals and Systems	EC303C	create a foundation in signals and systems which will facilitate better understanding of higher level subjects like signal processing, control systems, communication systems
17.	EC304C	Electro Magnetic Waves and Transmission Lines	EC304C	analyze Electrostatic fields and its applications in ECG,EEG etc. and find energy stored in electric field and find resistance and capacitance.
18.	EC305C	Digital Logic Design	EC305C	apply principles of Boolean algebra to manipulate and minimize logic expression and use K-maps and tabular method to minimize logic functions
19.	EC306C	Analog Circuits	EC306C	analyze, design, simulate and build amplifier circuits, and measure their properties. Design and produce small signal amplifier circuits for various practical applications.
20.	EC309S	Entrepreneurship and Design Thinking	EC309S	

21.	MC310A	Constitution of India	MC310A	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
22.	EC307L	Basic Electrical Engineering Laboratory	EC307L	different software's which are used for simulation of electrical networks and about applications of different theorems.
23.	EC308L	Electronic Devices Laboratory	EC308L	Should be able to design and analyze the voltage amplifiers. Should be able to determine the load regulation and line regulation for the voltage regulators
24.	EC311L	Simulation Laboratory	EC311L	practice MATLAB commands and emphasis on creating and accessing data in variables, mathematical and statistical calculations with vectors and creating basics visualizations
IV Semester				
25.	EC401C-	Linear Control Systems	EC401C-	learn signal flow graphs and mason's gain formula. Understand the transfer function of electrical, mechanical and electro – mechanical elements through mathematical modeling
26.	EC402C-	Probability Theory and Stochastic Processes	EC402C-	Able to evaluate probability for different experiments and obtain Distribution function, Density functions, and Conditional density functions for different Random variables.
27.	HS403C-	Managerial Economics and Accountancy	HS403C-	Introduce to managerial Economics, Cost Analysis Production and Supply Analysis and gain Knowledge in Price and Output Decisions Under Different Market Structures Understand Macro Economic environment of the business and its impact on enterprise and to Understand the concepts of financial management and smart investment.
28.	EC404C-	IC Applications	EC404C-	understand various modes of operation of an operational amplifier and the linear and non-linear applications of operational amplifiers
29.	EC405C-	Analog Communications	EC405C-	Helps to understand the applications of different communication in day to day life
30.	EC409S-	Python Programming	EC409S-	
31.	EC406L	Digital Logic Design Laboratory	EC406L	Provides introduction to logic designs and the basic building blocks used in digital systems.To understand the number systems and codes, Boolean algebra, and logic gates.
32.	EC407L	Analog Circuits Laboratory	EC407L	design and analyze the voltage amplifiers and calculate the efficiency of class – A power amplifiers

33.	EC408L	IC Applications Laboratory	EC408L	differentiate liner and non-linear wave shaping and Able to design logic gates and flip-flops

CSC
DATA GIVEN 29-07-2022

EEE

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
I Semester				
	MAT01	Engineering Mathematics – I	2016	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
	CST01	Computer Programming	2016	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.

2016 To understand Identify and resolve the issues related to sources of different types pollutions and Provide solutions to individuals, individuals, industries and government for sustainable development of natural resources.

2016 Understand basic concepts related to civil engineering

2016 Understand basic concepts related to mechanical engineering

2016 Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing.

2016 Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs (in C language). Explain the ideas implement searching and sorting algorithms.

ENP01	English Communication Lab	2016	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
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II Semester

MAT02	Engineering Mathematics – II	2017	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices.
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CST02	Data Structures	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
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PHT01	Engineering Physics	2017	Aquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses.
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CYT01	Engineering Chemistry	2017	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
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MET01	Engineering Graphics	2017	Gains knowledge on first angle projection and third angle projection of drawings.
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EET02	Circuit Theory	2017	Able to verify theorems, analyze time domain behavior of circuits
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CSP02	Data Structures Lab	2017	To understand various methods and nationals for comparing the performance of various data structures and To development of linear data structures like stacks, Queues and their operations, implementation using Arrays and linked lists.
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MEP01	Workshop Practice	2017	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
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III Semester

MAT03	Engineering Mathematics – III	2017	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
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EET 03	Network Analysis	2017	Able to apply network theorems, analyse time domain behavior for different circuits. Evaluate and synthesize two port network
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ECT02	Electronic Devices	2017	Able to understand concepts and biasing of different components, design and analyze different electronic devices
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EET04	Electromagnetic Fields	2017	Ability to learn different concepts in Electrostatic fields and magnetic fields and get acquainted with time varying electric and magnetic fields
EET05	Generation of Electrical Power	2017	Understand different modes of power generation,transmission
EET06	Electromechanical Energy Conversion-I	2017	Able to analyze concepts, operation and performance of different DC machines and transformer
EEP 01	Circuits and Networks Lab	2017	Able to verify theorems, analyze time domain behavior of circuits, evaluate two port networks
EEP 02	Matlab Simulation Lab	2017	Understand matlab programming and design simulink models

IV Semester

EET07	Signals and Systems	2018	Differentiate between various types of signals and classify systems, Solve differential and difference equations
ECT55	Analog Circuits	2018	Able to understand concepts and biasing of different components, design and analyze different electronic devices
HUT03	Economics	2018	Understand Macro Economic environment of the business and its impact on enterprise
HUT04	Accountancy	2018	Understand function of accounting, different financial concept analysis
ECT56	Digital Logic Design	2018	Understand designing and analyzing different digital logic circuits
EET11	Power Systems-I	2018	Ability to Understand the power system structure and principles of energy generation, Analyze the economic aspects of power generation
EET12	Electromechanical Energy Conversion-II	2018	Understand the constructional details and principle of operation of Induction and Synchronous Machines and performance analysis
EEP03	Electromechanical Energy Conversion-I lab	2018	the ability to test the performance of any DC machines and single-phase transformers, Analyze the various speed control methods of DC machines

V Semester

EET13	Linear Control Systems	2018	Understand different systems, concept of stability, controllers
ECT57	Pulse and Digital Circuits	2018	Understand different digital circuits and its analysis
ECT58	Analog and Digital IC Applications	2018	Understand different analog and digital circuits and its applications
HU02	Management Science	2018	Understand the Nature of Management and understand the Social Responsibilities of business
EET14	Power Systems-II	2018	Ability to Understand the power system transmission lines,faults,switch gear
EET15	Electromechanical Energy Conversion-III	2018	Understand the constructional details and principle of operation of Induction and Synchronous Machines and performance analysis

EEP05	Electromechanical Energy Conversion-II Lab	2018	Test and analyze the performance of induction motors and synchronous machines
EE P06	PDC & IC Lab	2018	Hands on experiments related to PDC&IC

VI Semester

EET16	Advanced Control System	2019	Understand stability, controllers, analysis of different systems
EET17	Microprocessors and Microcontrollers	2019	Able to do assembly language programming, different peripherals, micro-controllers
EET18	Power System Analysis	2019	Ability to use different numerical methods, monitoring and controlling, power system economics
EET19	Power Electronics	2019	Able to analyse rectifiers, choppers, inverters
0.00E+00	Elective-I (OPEN ELECTIVE)	2019	

EET10	Electrical and Electronic Measurements	2019	Understand and analyze different measuring instruments and bridges
EEP07	Control Systems Lab	2019	Hands on experiments related to control systems
EEP08	EEM Lab	2019	Hands on experiments related to EEM

VII Semester

EET20	Power System Operation and Control	2019	Understand and analyse different operation and control methods of power systems
EET21	Power Semiconductor Controlled Drives	2019	Ability to analyse different methods of power semiconductor control drives
EET22	Utilization of Electrical Power	2019	Understand illumination concepts, utilization of power
EET23	Power System Protection	2019	Understand different switch gear concepts
EEL-01	Elective –II (Department)	2019	

EEL02	Elective-III(Department)	2019	
EEP09	Power Electronics Lab	2019	Hands on experiments related to Power electronics
EEP10	Microprocessors and Applications Lab	2019	Hands on experiments related to Microprocessors and its applications

VIII Semester

EEL03	Elective-IV (e-learning)	2020	
EEL04	Elective -V(MOOCs)	2020	
EEP11	Mini Project / Internship	2020	Acquire practical knowledge and carrying out Electrical engineering works in the field
EEP12	Power System Simulation Lab	2020	Hands on experiments related to power systems simulation

EEP13	Project Work	2020	Capability to work in convenient group and doing a project involving theoretical and experimental studies
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R-18

S. No Course Code Title of the Course Year of Introduction Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development

I Semester

1	MABST 101	Mathematics-I	2018	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2	PYBST102	Modern Physics	2018	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses
3	CSEST103	Programming for problem solving	2018	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs
4	CEEST104	Engineering Mechanics	2018	To introduce different types of stresses and strains, elastic constants and behaviour of different internal forces under different types of loading
5	MEESW105	Workshop/ Manufacturing Practice	2018	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials
6	CSESP106	Programming for problem solving lab	2018	Hand on experience in implementing simple algorithms for arithmetic and logical problems and translating the algorithms to programs
7	CEMCT107	Environmental Science	2018	Introducing diverse components of environment and natural resources ecosystem and biodiversity and its conservation methods, population growth and human health green technology

II Semester

1	MABST201	Mathematics-II	2019	In depth understanding of use ranks of matrices to decide whether the system of linear equations is consistent or not and use of Cayley-Hamilton theorem to find inverses or powers of matrices
2	CYBST202	Engineering Chemistry	2019	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
3	ENHST 203	English	2019	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing
4	EEEST204	Basic Electrical Engineering	2019	Understand and analyze basic electric and magnetic circuits and the working principles of electrical machines
5	MEEST205	Engineering Graphics and Design	2019	Gains knowledge on first angle projection and third angle projection of drawings

6 ENHSP 206	English Communication Lab	2019	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills
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III Semester

1 MABST301	Mathematics –III	2019	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data
2 EEPCT302	Electro Magnetic Fields	2019	Ability to learn different concepts in Electrostatic fields and magnetic fields and get acquainted with time varying electric and magnetic fields
3 EEPCT303	Electrical Circuit Analysis	2019	Able to apply network theorems, analyze time domain behavior for different circuits. Evaluate and synthesize two port network
4 EEPCT304	Electrical Machines –I	2019	Able to analyze concepts, operation and performance of different DC machines and transformer
5 ECPCT305	Analog Electronics	2019	Able to understand concepts and biasing of different components, design and analyze different electronic devices
6 EOHST306	Economics	2019	Understand Macro Economic environment of the business and its impact on enterprise
7 EEPCT307	Electrical Circuit Analysis Lab	2019	Able to verify theorems, analyze time domain behavior of circuits, evaluate two port networks
8 EEPCT308	Electrical Machines-I Lab	2019	the ability to test the performance of any DC machines and single-phase transformers, Analyze the various speed control methods of DC machines
9 ECPCT309	Analog Electronics Lab	2019	ability to Plot,design,construct, analyze different analog electronic devices
10 PAMCT310	Constitution of India	2019	Understand historical background of the constitution making and its importance for building a democratic India and apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy

IV Semester

1 EEPCT401	Power systems-I	2020	Ability to Understand the power system structure and principles of energy generation, Analyze the economic aspects of power generation
2 ECPCT402	Digital Electronics	2020	Able to understand concepts and biasing of different components, design and analyze different electronic devices
3 ECPCT403	Signals and Systems	2020	Differentiate between various types of signals and classify systems, Solve differential and difference equations
4 EEPCT404	Electrical Machines-II	2020	Understand the constructional details and principle of operation of Induction and Synchronous Machines and performance analysis
5 EOHST405	Accountancy	2020	Understand function of accounting, different financial concept analysis
6 EEPCT406	Measurements & Instrumentation Lab	2020	Test and analyze different measuring instruments and bridges

7	EEPCP407	Electrical Machines-II Lab	2020	Test and analyze the performance of induction motors and synchronous machines
8	ECPCP408	Digital Electronics Lab	2020	ability to Plot,design,construct, analyze different digital electronic devices
V Semester				
1	EEPCT501	Control Systems	2020	Understand different systems, concept of stability, controllers
2	EEPCT502	Power Systems- II	2020	Ability to Understand the power system transmission lines,faults,switch gear
3	ECPCT503	Microprocessors	2020	Able to do assembly language programming, different peripherals, micro-controllers
4	EEPET504	Professional Elective –I	2020	
5	EEPCP505	Control Systems Lab	2020	Hands-on experiments related to the course contents of Control Systems
6	EEPCP506	Power Systems - I Lab	2020	Hands-on experiments related to the course contents of power system I
7	ECPCP507	Micro Processors Lab	2020	Hands-on experiments related to the course contents of Microprocessors
VI Semester				
1	EEPCT601	Power Systems - III	2021	Ability to use different numerical methods, monitoring and controlling, power system economies
2	EEPCT602	Power Electronics	2021	Able to analyse rectifiers,choppers,inverters
3	EEPET603	Professional Elective - II	2021	
4	EEPET604	Professional Elective - III	2021	
5	EEOET605	Open Elective –I Online (MOOCS)	2021	
6	EEOET606	Open Elective –II Online (MOOCS)	2021	
7	MGHST607	Management Science	2021	Understand the Nature of Management and understand the Social Responsibilities of business
8	EEPCP608	Power Electronics Lab	2021	Hands-on experiments related to the course contents of power electronics
9	ECPCP609	Electronic Design Lab	2021	Hands-on experiments related to the course contents of electronic design
VII Semester				
1	EEPET701	Professional Elective – IV	2021	
2	EEPET702	Professional Elective – V	2021	
3	EEPET703	Professional Elective – VI	2021	
4	EEPCP704	Power System –II Lab	2021	Hands-on experiments related to the course contents of power system II
5	EEPCX705	Project work – Phase I	2021	Enable the students to work in convenient group and capable of doing a project involving theoretical and experimental studies

6	EEPCI706	Summer -Internship/ Mini project	2021	Acquire practical knowledge and carrying out Electrical engineering works in the field
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VIII Semester

1	EEPET801	Professional Elective – VII	2022	
2	EEPET802	Professional Elective – VIII	2022	
3	EEOET803	Open Elective – III	2022	
4	EEOET804	Open Elective – IV	2022	
5	EEPCX805	Project work – Phase II	2022	Capability to work in convenient group and doing a project involving theoretical and experimental studies

R-20

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
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I Semester

1	MA101	Mathematics-I	2020	Understand the application of differential equations to engineering problems and usage of multiple integral in evaluating area and volume of any region bounded by the given curves.
2	PY102	Modern Physics	2020	Acquire competence and working knowledge of laws of modern Physics in understanding advanced technical engineering courses
3	CS103	Programming for problem solving	2020	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
4	CE104	Engineering Mechanics	2020	To introduce different types of stresses and strains, elastic constants and behavior of different internal forces under different types of loading
5	ME105	Workshop/ Manufacturing Practice	2020	Exposing to the different manufacturing processes which are commonly employed in the industry to fabricate components using different materials.
6	CS106	Programming for problem solving lab	2020	Understand the logic, develop, test and execute the programs using arrays, pointers and structures to formulate algorithms and programs.
7	CE107	Environmental Science	2020	Introducing diverse components of environment and natural resources ecosystem and biodiversity and its conservation methods, population growth and human health green technology.

II Semester

1	MA201	Mathematics-II	2021	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
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2	CY202	Engineering Chemistry	2021	In depth understanding of analyzing microscopic chemistry in terms of atomic and molecular orbital and intermolecular forces. And major chemical reactions that are used in the synthesis of molecules.
3	EN203	English	2021	Develop communication skills by cultivating the habit of reading comprehension passages and gains language skills through listening, speaking, reading and writing
4	EE204	Electrical Circuits	2021	Gains knowledge on first angle projection and third angle projection of drawings.
5	ME205	Engineering Graphics and Design	2021	
6	EN206	English Communication Lab	2021	
III Semester				
1	MA301B	Mathematics –III	2021	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
2	EE302C	Electro Magnetic Fields	2021	Ability to learn different concepts in Electrostatic fields and magnetic fields and get acquainted with time varying electric and magnetic fields.
3	EE303C	Network Analysis	2021	Able to apply network theorems, analyse time domain behavior for different circuits. Evaluate and synthesize two port network
4	EE304C	D.C. Machines and Transformers	2021	Able to analyze concepts, operation and performance of different DC machines and transformer
5	EE305C	Analog Electronics	2021	Able to understand concepts and biasing of different components, design and analyze different electronic devices
6	EE306L	Electrical Circuits and Networks Lab	2021	Able to verify theorems, analyse time domain behavior of circuits, evaluate two port networks.
7	EE307L	D.C. Machines and Transformers Lab	2021	the ability to test the performance of any DC machines and single-phase transformers, Analyze the various speed control methods of DC machines, connections of three phase transformers
8	EE309S	Computer Skills	2021	Ability to identify basic terms, concepts, and functions of computer system components. Select and use the appropriate software application
9	MC310A	Constitution of India	2021	Understand historical background of the constitution making and its importance for building a democratic India and apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy
10	MA301B	Mathematics –III	2021	Developing ability to solve mathematical problems involving random variables and applying statistical methods for analysing experimental data.
IV Semester				

1	EE401C	Power systems-I	2022	Ability to Understand the power system structure and principles of energy generation, Analyze the economic aspects of power generation
2	EE402C	Induction Motors and Synchronous Machines	2022	Understand the constructional details and principle of operation of Induction and Synchronous Machines and performance analysis
3	HS403C	Managerial Economics and Accountancy	2022	Understand Macro Economic environment of the business and its impact on enterprise and to Understand the concepts of financial management and smart investment.
4	EE404C	Digital Electronics	2022	Understand working of logic families and logic gates, process of Analog to Digital conversion and Digital to Analog conversion
5	EE405C	Signals and Systems	2022	Differentiate between various types of signals and classify systems, Solve differential and difference equations
6	EE406L	Induction Motors and Synchronous Machines Lab	2022	Test and analyze the performance of induction motors and synchronous machines
7	EE407L	Analog and Digital Electronics Lab	2022	ability to Plot,design,construct, analyze different analog and digital electronic devices
8	EE409S	Python Programming	2022	ability to Implement python programming, Evaluate and handle the errors,extract and import packages for developing different solutions


ECE

R-18

S. No	Course Code	Title of the Course	Year of Introduction	Activities/Content with direct bearing on Employability/Entrepreneurship/Skill development
1	HSACT310	Constitution of India	2019	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India
2	ECOET506	Open Elective - I	2020	
3	ECOET507	Open Elective-II (MOOCs)	2020	
4	ECPET603	Program Elective II (MOOCs / e Learning)	2021	
5	ECPXP609	Electronic Design Workshop / Mini Project	2021	Conceive a problem statement either from rigorous literature survey or from the requirements raised from need analysis. Design, implement and test the prototype/algorithm in order to solve the conceived problem.
6	HSMCT704	Total Quality Management	2021	

MECH	Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on
				Employability/ Entrepreneurship/ Skill development
2	MEPCT303	Industrial safety and measures	2018-19	Understand the methods of hazard identification and preventive measures.
	MEPCT305	Manufacturing	2018-19	Able to identify the techniques for the quality assurance of the products and the optimality of the process in terms of resources and time management.
		Technology		
	MEPCT406	Instrumentation and Control	2018-19	Select and install the various measuring instruments for industrial purposes.
	PAMCT401	Constitution of India	2018-19	
	MEPCT402	Applied Thermodynamics	2018-19	Understanding the concepts such as conservation of mass, conservation of energy, work interaction, heat transfer and first law of thermodynamics
	CEPCT404	Solid Mechanics	2018-19	Learn about the elastic and plastic behavior of material and evaluate stress invariants, principal stresses and their directions.
	CSEST203	Programs for problem solving	2018-19	Able to use the concept of branching and looping to design efficient C program and be able to apply the concepts of user defined function and recursion to support reusability
	MEOET607	Open Elective-I (MOOCS)	2018-19	
	MEOET608	Open Elective-II (MOOCS)	2018-19	
	MEOET609	Open Elective-III (MOOCS)	2018-19	
	MEOET610	Open Elective-IV (MOOCS)	2018-19	
	HS303C	Managerial Economics	2020-21	Understand Macro Economic environment of the business and its impact on enterprise.
		and Accountancy		
	ME309S	Skill Development Course-1 (CAD Laboratory)	2020-21	
	ME409S	MATLAB	2020-21	Able to understand the basic features of MATLAB platform
	PEPE31	Automation in manufacturing	2018-19	Automation with respect to industry 4.0
PEPE 22	Design for Manufacturing	2018-19	Design plastic components, sheet metal and casting for machining and joining and selecting a proper processes for different joining cases	
PGOP12	Industrial Safety	2020-21	Industrial laws implementation regarding safety aspects of employees and surrounding atmosphere	

IECP 02	Simulation Lab - I	2018-19	Able to understand the basic programming knowledge with respect to domain.
PGMC 01	Research Methodology and IPR	2018-19	Understand research problem formulation
IEPE 51	Design and Analysis of Experiments	2018-19	Develop appropriate experimental design to conduct experiments for a given problem.
IEPE 52	System Dynamics	2018-19	Ability to develop students' skills in analyzing, simulating, and identifying dynamic systems based upon their input-output responses
MEOET05	Engineering System Analysis and Design	2020-21	Design the system for fabrication and manufacturing of any machine element
MEOET07	Green Energy Systems	2020-21	Eco friendly processes
MEPET03	Mechatronic Systems	2020-21	Awareness on both pneumatic and hydraulic systems in handling huge machine tools
MEPET01	Advanced Manufacturing Processes	2020-21	Modern manufacturing process which employ hybrid machining


 The Director
 NAAC Committee
 S.V. University
 TIRUPATI - 517 502