



**Appendix – ‘A’ to Item No. ‘B-1’**  
**SRI VENKATESWARA UNIVERSITY, TIRUPATI**  
**SVU COLLEGE OF ARTS**  
**P.G. Degree Programme (CBCS) Regulations-2016**  
**(With effect from the batch admitted in the academic year 2016-17)**  
**CHOICE-BASED CREDIT SYSTEM (CBCS)**

**1. Preamble:**

P.G Degree Programme is of two academic years with each academic year being divided into two consecutive (one odd + one even) semesters.

Choice-Based Credit System (CBCS) is a flexible system of learning and provides choice for students to select from the prescribed elective courses. A course defines learning objectives and learning outcomes and comprises of lectures/tutorials/laboratory work/field work/project work/viva/seminars/ assignments/ presentations/ self-study etc. or a combination of some of these.

Under the CBCS, the requirement for awarding a degree is prescribed in terms of number of credits to be completed by the students.

**The CBCS permits students to:**

- i. Choose electives from a wide range of courses offered by the Departments of the College/University.
- ii. Opt for additional courses of interest
- iii. adopt an inter-disciplinary approach in learning
- iv. make the best use of expertise of the available faculty

**2. Minimum Qualification:**

Minimum qualification for seeking admission into a specialization of P.G Degree Programme is U.G Degree, with at least 40% marks for general and pass marks for SC/ST in aggregate, awarded by Sri Venkateswara University (SVU) in the appropriate Branch of learning or any other equivalent examination recognized by other Higher Education Institution and Universities.

**3. Branches of Study:**

The Branches of study in PG Degree Programme are:

<b>S. No.</b>	<b>Name of the Department</b>
1	Adult & Continuing Education
2	Ancient Indian History Culture & Archaeology
3	Econometrics
4	Economics
5	English
6	Hindi
7	History
8	Human Rights & Social Development
9	Foreign Languages & Linguistics
10	Library & Information Science
11	Performing Arts
12	Philosophy
13	Political Science & Public Administration
14	Population Studies & Social Work
15	Rural Development & Management

16	Sanskrit
17	Sociology
18	Area Studies (South East Asian Pacific Studies)
19	Tamil
20	Telugu Studies
21	Tourism
22	Arabic, Persian & Urdu
23	Centre for Extension Studies & Centre for Women's Studies

4. **Programme Duration:**

4.1 Minimum duration of the full-time P.G Programme is two consecutive academic years i.e. four semesters and maximum period is four academic years.

4.2 **Semester:**

Generally, each semester shall consist of 90 actual instruction days including the sessional test days. However, instructional days may be reduced up to 72, when necessary, with increased instructional hours per course per week.

5. **Credits:**

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of instruction hours per week. The norms for assigning credits to a course for a duration of one semester shall be as follows:

- i One credit for every one hour of lecture/tutorial per week
- ii One credit for every two hours of practical work/seminar per week
- iii 4 credits in a semester for project work.

6. **Classification of Courses:**

The courses of each specialization of study are classified into Core Courses and Elective Courses and Foundation courses. It is mandatory for a student to complete successfully all the Core and Elective courses pertaining to his/her of specialization of study.

**Semester-I**

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	<b>Core</b>	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.		3		6	4	20	80	100
4.		4		6	4	20	80	100
5.	<b>Compulsory Foundation</b>	5a	Opt- 1	6	4	20	80	100
		5b						
		5c						
6.	<b>Elective Foundation</b>	6a	Opt- 1	6	4	20	80	100
		6b						
<b>Total</b>				<b>36</b>	<b>24</b>	<b>120</b>	<b>480</b>	<b>600</b>

\*All CORE Papers are Mandatory

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

## Semester-II

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.		3		6	4	20	80	100
4.		4		6	4	20	80	100
5.	Compulsory Foundation	5a	Opt-1	6	4	20	80	100
		5b						
		5c						
6.	Elective Foundation	6a	Opt-1	6	4	20	80	100
		6b						
<b>Total</b>				<b>36</b>	<b>24</b>	<b>120</b>	<b>480</b>	<b>600</b>

\*All CORE Papers are Mandatory

- Compulsory Foundation - Choose one paper
- Elective Foundation - Choose one paper.
- Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.

## Semester-III

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total					
1.	Core	1	Mandatory	6	4	20	80	100					
2.		2		6	4	20	80	100					
3.		3		6	4	20	80	100					
4.	Generic Elective	4a	Opt-2	6	4	20	80	100					
		4b											
		4c							6	4	20	80	100
		4d											
5.	Open Elective	5a	Opt- 1	6	4	20	80	100					
		5b											
		5c											
<b>Total</b>				<b>36</b>	<b>24</b>	<b>120</b>	<b>480</b>	<b>600</b>					

\* All CORE Papers are Mandatory

- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

## Semester-IV

Sl.no	Components of Study	Title of the Course	Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total	
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.		3		6	4	20	80	100
4.	Generic Elective	4a	Opt-2	6	4	20	80	100
		4b		6	4	20	80	100
		4c		6	4	20	80	100
		4d		6	4	20	80	100
5.	Open Elective	5a	Opt- 1	6	4	20	80	100
		5b						
		5c						
<b>Total</b>				<b>36</b>	<b>24</b>	<b>120</b>	<b>480</b>	<b>600</b>

\* All CORE Papers are Mandatory

- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

#### 6.1 Core Course:-

There may be a core course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

#### 6.2 Elective Course:-

Elective course is a course which can be chosen from a pool of papers. It may be :

- Supportive to the discipline of study
- Provide a expanded scope
- Enable an exposure to some other discipline/domain
- Nurture student's proficiency/skill.

6.2.1. An elective may be "Generic Elective" focusing on those courses which add generic proficiency to the students. These electives shall be "Discipline centric". Three or Four papers may be offered, of which Two may be chosen.

6.2.2 An elective may be "Open Elective" and shall be offered for other Disciplines only. Atleast one paper must be chosen for study as mandatory. More than one paper may be studied through self study.

#### 6.3 Foundation Course:-

The Foundation Courses may be of two kinds: Compulsory Foundation and Elective foundation, "Compulsory Foundation" courses are the courses based upon the content that leads to Knowledge enhancement. They are mandatory for all discipline. Elective Foundation courses are value-based and are aimed at man-making education.

#### 6.4 MOOCS and e-Learning:

Discipline centric elective course through MOOCS (Massive Open Online Course) platform. Students of I, II and/or III semesters can register for the courses/offered by authorized Institutions/Agencies through online with the approval of the DDC concerned. The certificate issued by the Institutions/Agencies after successful completion of the course will be considered for the award of the Grade to that course in open electives category only. Further, 30-40% of the syllabus of any one course in I, II and III semesters may be taught through e-Learning.

## 7 **Course Registration:**

Every student has to register for the set of Courses offered by the Department in that Semester including those of Open Elective course of the other Departments and MOOCS courses with the total number of their Credits being limited by considering the permissible weekly contact hours (typically: 36/Week).

## 8 **Credits Required for Award of Degree:**

A student shall become eligible for the award of P.G degree, if he/she earns a minimum of 96 credits by passing all the core and electives along with practicals, seminars, comprehensive viva-voce prescribed for the programme.

- 8.1 It is mandatory for a student to complete successfully all the core courses pertaining to his/her specialization of study.
- 8.2 A student may choose Generic Electives from the list of elective courses offered from his/her specialization of study.
- 8.3 Further, a student may select from a list of Elective courses from other Departments as Open Electives to “suit the required” number of credits, such that the total credits is atleast 96.
- 8.4 There should be a register maintained by the Head of the Department indicating for each student, the course (s) registered by the student within the department, so that “Generic Electives” opted by the student are indicated.
- 8.5 In the case of Open Elective, the Head of the Department should prepare a statement /register indicating the courses choosen/ opted by the students of the department in other departments.
- 8.6 The Head of the Department should send the list of registered papers (opted by the students) to the principal with a copy to the controller of examinations immediately with in a week of commencement of each semester.
- 8.7 A copy of the courses registered by the students in each semester approved by the Principal shall be sent to the Academic Branch as well as Examination Branch.
- 8.8 The list of students registered for Mooc’s shall be furnished giving details of the programme with a copy to the Principle and Controller of Examinations.
- 8.9 A model of Registers to be maintained by the Head of the Department is given in the Annexure. It is mandatory on the part of the Head of the Department to maintain Register for each UG/PG Course separately.

## 9. **Scheme of Instruction :**

The Board of Studies (BOS) of each specialization shall formulate the scheme of instruction and detailed syllabi. For every course learning objectives and learning outcomes should be defined. While formulating the scheme of instruction, the BOS shall facilitate to offer the minimum number of credits for the entire Programme. The syllabi of theory courses shall be organized into four / five units of equal weight. The question paper for the Semester end University Examination in theory course shall consist of four / five units, two questions from each unit of syllabus carrying a total of 60 marks. There shall be short answer questions for a total of 20 marks.

- 9.1 Part A contains of 20 marks with two short question from each unit out of which the student has to answer five questions with each question carrying 4 marks with a total of 20marks.

Examination in theory shall consist of five units in each paper, two questions from each unit of syllabus out of which a student shall answer one question carrying 12 marks for each question with a total of 60 marks.

In case of any course / programme having practicals out of the total 80 marks, the theory shall consist of 50 marks and practicals 30 marks. Out of the total theory marks of 50, section A carries 10 marks and Section B 40 marks. Section A contains 8 short questions out of which 5 should be answered, each question carrying 2 marks.

In Section B, out of 10 questions 5 are to be answered with internal choice each question carrying 8 marks.

10. **Course Numbering Scheme:**

Each course is denoted by an alphanumeric code as detailed below:

S. No	Name of the Course	Course Code
<b>ARTS</b>		
1	Adult & Continuing Education	<b>MAAE</b>
2	Ancient Indian History Culture & Archaeology	<b>AIHC&amp;A</b>
3	Econometrics	<b>EMT</b>
4	Economics	<b>ECO</b>
5	English	<b>ENG</b>
6	Hindi	<b>HIN</b>
7	History	<b>HST</b>
8	Human Rights & Social Development	<b>HR</b>
9	Foreign Languages & Linguistics	<b>LING</b>
10	Library & Information Science	<b>LIS</b>
11	Performing Arts (Music)	<b>PA-M</b>
12	Performing Arts (Dance)	<b>PA-D</b>
13	Philosophy	<b>PHI</b>
14	Political Science & Public Administration	<b>PSPA</b>
15	Population Studies	<b>PSC</b>
16	Rural Development & Management	<b>MARDM</b>
17	Sanskrit	<b>SNSKT</b>
18	Social Work	<b>MSW</b>
19	Sociology	<b>MASO</b>
20	Area Studies (South East Asian Pacific Studies)	<b>SEAP</b>
21	Tamil	<b>TML</b>
22	Telugu Studies	<b>TEL</b>
23	Tourism	<b>T</b>
24	Urdu	<b>URD</b>
25	Women Studies & Management	<b>SVUWS</b>

11. **Evaluation :**

- 11.1 Evaluation shall be done on a continuous basis i.e. through Continuous Internal Evaluation (CIE) in the Semester and Semester End Examination (SEE). For each theory course, there shall be two internal tests of two hours duration carrying 20 marks each and one Semester end Examination of 3 hours duration carrying 80 marks. Internal marks for a maximum of 20 shall be awarded based on the average performance of the two internal tests.
- 11.2 The first internal test shall be held immediately after the completion of 50% of the instruction days covering 50% of the syllabus. The second internal test shall be held immediately after the completion of 90 instruction days covering the remaining 50% of the syllabus.
- 11.3 It is mandatory for a student to attend both the internal tests in each theory course. The weighted average of the marks secured in two tests is awarded as sessional marks. However, 0.8 shall be assigned as weight for the best performance of the two tests whereas for the other test it shall be 0.2. If a student is absent for any of the internal test for whatsoever reason, the marks for that test shall be zero.
- 11.4 The students shall verify the valuation of answer scripts of sessional tests and sign on the same after verification.

11.5 The valuation and verification of answer scripts of Sessional Tests shall be completed within a week after the conduct of the internal tests. The answer scripts shall be maintained in the dept until the semester end results are announced.

11.6 The valuation of Semester end Examination answer scripts shall be arranged by the Controller of Examinations as per the University procedures in vogue.

**11.7 Evaluation of Practicals:**

For each practical course, the sessional marks for a maximum of 100 shall be awarded by the teacher based on continuous assessment of practical work. The Semester end University practical Examinations carrying 100 marks shall be conducted by i) Internal examiners and ii) external examiner permitted by the BoS of the Department a panel submitted to the Controller of Examinations.

**12. Project Work :**

12.1 The work shall be carried out in the concerned department of the student or in any recognized Educational Institutions of Higher learning / Universities / Industry / Organization as approved by the DDC. The student shall submit the outcome of the project work in the form of a report.

12.2 The project work shall be evaluated at the end of the IV semester with 70 marks for the report and 30 marks for the Viva Voice with a maximum of a 100 marks.

**13. Grading and Grade Points:**

**Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale

**Letter Grade:** It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

**Semester Grade Point Average (SGPA):** It is a measure of performance of work done in a semester. It is the ratio of total credit points secured by a student in the courses registered in a semester and a total course credits taken during that semester. It shall be given up to two decimal places.

$$\text{SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Where  $C_i$  is the number of credits of the  $i$ th course and  $G_i$  is the grade point scored by the student in the  $i$ th course.

The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

**Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in the courses in all semesters and the sum of the total credits of all courses in all the semesters. It is given up to two decimal places.

$$\text{CGPA} = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

Where  $S_i$  is the SGPA of the  $i$ th semester and  $C_i$  is the total number of credits in that semester.

The SGPA and CGPA shall be rounded off to two decimal points and reported in the transcripts.

**Letter Grades and Grade Points:**

A 10-point grading system with the following letter grades is to be followed.

**Grades and Grade Points**

<b>Marks</b>	<b>Grade Point</b>	<b>Letter Grade</b>
75-100	7.5-10	O (Outstanding)
65-74	6.5-7.4	A+ (First)
60-64	6.0-6.4	A (First)
55-59	5.5-5.9	B+ (Second)
50-54	5.0-5.4	B (Second)
40-49	4.0-4.9	C (Third)
00-39	0.0-3.9	F (Fail)

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

- 13.1 In each Semester, every student who satisfies the attendance requirements should register for examination, failing which he/she shall not be promoted to the next semester. Any such student who has not registered for examination in a semester shall repeat that semester in the next academic year after obtaining the proceedings of the Principal.
- 13.2 To pass a course in PG Programme, a student has to secure the minimum grade of (P) in the PG Semester end Examination. A student obtaining Grade F shall be considered failed and will be required to reappear in the examination as supplementary candidate.
- 13.3 A student is eligible to improve the marks in a paper in which he has already passed, in with 4 years from the year of admission as and when it is conducted for the subsequent batches. This provision shall not be provided once the candidate is awarded Degree.
- 13.4 A student who has failed in a course can reappear for the Semester end Examination as and when it is held in the normal course. The Sessional Marks obtained by the student will be carried over for declaring the result.
- 13.5 Whenever the syllabus is revised for a course, the semester Examination shall be held in old syllabus three times. Thereafter, the students who failed in that course shall take the semester end Examination in the revised syllabus.

**14. Award of Degree :**

A student who has earned a minimum of 96 credits by passing in all the core courses and the minimum number of electives prescribed shall be declared to have passed the course work and shall become eligible for the award of degree.

- 14.1 A student who has earned extra credits shall be issued a separate certificate to that effect mentioning the subject and grade.



**15. Ranking and Award of Prizes / Medals :**

- 15.1 Ranks shall be awarded in each branch of study on the basis of Cumulative Grade Point Average (CGPA) for top ten percent of the students or top three students whichever is higher.
- 15.2 The students who have become eligible for the award of PG degree by passing all the four semester regularly without break, shall only be considered for the award of ranks.
- 15.3 Award of prizes, scholarships and other honours shall be according to the rank secured by the student as said above and in conformity with the desire of the Donor.

**16. Attendance Requirements:**

- 16.1 A student is required to complete the Programme of Study satisfying the attendance requirements in all the semesters within twice the prescribed period of study i.e. 4 academic years from the year of admission failing which he/she forfeits his/her seat.
- 16.2 A student shall repeat the semester if he/she fails to satisfy the attendance requirements given below:
- i A student shall attend at least 60 percent of the maximum hours of instruction taken by the teacher for each course.
  - ii A student shall attend at least 75 percent of the maximum hours of instruction taken for all the courses put together in that semester.
- 16.3 The Principal shall condone the shortage of attendance of a student provided; the student satisfies the clause 16.2 and obtain atleast 60% of overall attendance in a semester on medical grounds only.
- 16.4 A student who fails to satisfy the attendance requirements specified in clause 16.2 shall repeat that semester in the subsequent academic years with the written permission of the Principal.
- 16.5 A student shall not be permitted to study any semester more than two times during the Programme of his/her study.
- 16.6 A student who satisfies the attendance requirements specified in clause 16.2 in any semester may be permitted to repeat that semester after canceling the previous attendance and sessional marks of that semester with the written permission of the Principal. However, this facility shall be extended to any student not exceeding twice during the entire Programme of study provided the stipulation in clause 16.1 is met.

**17. Conditions of Promotion:**

A student shall be eligible for promotion to the next semester provided, if he/she satisfies the attendance requirements in the immediately preceding semester as specified in clause 16. The Principle of the concerned college will furnish the promotion list to the HOD at the beginning of II, III & IV Semesters.

**18. Transitory Regulations:**

- 18.1 A student who has been repeated in the previous regulations for not satisfying the attendance requirements shall be permitted to join in these regulations provided the clauses 16.1 and 16.4 hold good.
- 18.2 Semester end University Examinations under the regulations that immediately precede these regulations shall be conducted two times after the conduct of last regular examination under those regulations.

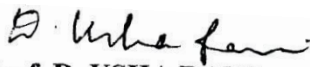
18.3 The students who satisfy the attendance requirements under the regulations that immediately precede these regulations, but do not pass the courses shall appear for the Semester end University Examinations in equivalent courses under these regulations as specified by the BOS concerned.

19 **Grievance Redressal Committee**

The Principal of the concerned college shall constitute a Grievance Redressal Committee by nominating three Professors from among the faculty of the college with the Vice – Principal of the college as Convenor and Chairperson for a period of two years. The Convener of the committee, one among the three, shall receive the complaints from the students regarding the valuation of sessional tests and place the same before the Committee for its consideration. The committee shall submit its recommendations to the Principal for consideration.

20. **Amendment to the Regulations:**

Sri Venkateswara University reserves the right to amend these regulations at any time in future without any notice. Further, the interpretation any of the clauses of these regulations entirely rest with the University.

  
**Prof. D. USHA RANI**  
**Dean Faculty of Arts**

**Appendix No: 'B' Item No: 'B-2'**  
**SRI VENKATESWARA UNIVERSITY :: TIRUPATI**  
**S.V.U COLLEGE OF ARTS**  
**DEPARTMENT OF ECONOMETRICS**  
(Syllabus Common for S V University College and affiliated by SVU Area)  
(Revised Scheme of Instruction and Examination, Syllabus etc., with effect from the  
Academic Year's 2016-17 for I and II Semesters and 2017-18 for III and IV Semesters)  
Revised CBCS Pattern with effect from 2016-17

**M.A. ECONOMETRICS – COURSE OF STUDY**  
**SCHEME OF INSTRUCTION AND EXAMINATION**

**Semester – I**

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 101	Microeconomic Theory I	6	4	Core	20	80	100
2	EMT 102	Macroeconomic Theory I	6	4	Core	20	80	100
3	EMT 103	Mathematical Methods	6	4	Core	20	80	100
4	EMT 104	Practical I	6	4	Core	20	80	100
5.	EMT 105	Statistical Methods	6	4	CF	20	80	100
6.	EMT 106	Human Values and Professional Ethics – I	6	4	EF	20	80	100
		<b>Total</b>	<b>36</b>	<b>24</b>		<b>120</b>	<b>480</b>	<b>600</b>

\*All CORE Papers are Mandatory

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

**Semester – II**

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 201	Microeconomic Theory II	6	4	Core	20	80	100
2	EMT 202	Macroeconomic Theory II	6	4	Core	20	80	100
3	EMT 203	Basic Econometrics	6	4	Core	20	80	100
4	EMT 204	Practical II	6	4	Core	20	80	100
5.	EMT 205	Mathematical Economics	6	4	CF	20	80	100
6.	EMT 206	Human Values and Professional Ethics II	6	4	EF	20	80	100
		<b>Total</b>	<b>36</b>	<b>24</b>		<b>120</b>	<b>480</b>	<b>600</b>

\*All CORE Papers are Mandatory

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

### Semester – III

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 301	Advanced Econometrics	6	4	Core	20	80	100
2	EMT 302	Optimization in Economics	6	4	Core	20	80	100
3	EMT 303	Practical III	6	4	Core	20	80	100
4	EMT 304	Computer Applications and Data Analysis	6	4	Generic Elective	20	80	100
5	EMT 305	Public Finance						
6	EMT 306	Economics of Development and Planning						
7	EMT 307	Financial Institutions and Markets	6	4	Open Elective	20	80	100
8	EMT 308	Introduction to Econometrics						
9	EMT 309	Indian Economy						
10	EMT 310	Economics of Insurance						
<b>Total</b>			<b>36</b>	<b>24</b>		<b>120</b>	<b>480</b>	<b>600</b>

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- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

### Semester – IV

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 401	Applied Econometrics	6	4	Core	20	80	100
2	EMT 402	Time Series Econometrics	6	4	Core	20	80	100
3	EMT 403	Practical IV	6	4	Core	20	80	100
4	EMT 404	International Trade and Finance	6	4	Generic Elective	20	80	100
5	EMT 405	Indian Economy						
6	EMT 406	Environmental Economics						
7	EMT 407	Project	6	4		20	80	100
8	EMT 408	Optimization Techniques in Economics	6	4	Open Elective	20	80	100
9	EMT 409	Data Base for the Indian Economy						
10	EMT 410	Actuarial Statistics						
<b>Total</b>			<b>36</b>	<b>24</b>		<b>120</b>	<b>480</b>	<b>600</b>

\* All CORE Papers are Mandatory

- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

Note: 1. The minimum credits per semester will be 24 and total minimum credits for all the semesters will be 96.  
 2. The internal students shall take atleast one open elective in a semester from the open electives offered by other Departments in the University or other Universities in the state or country either personally or through MOOCS.

**Evaluation:** a) The distribution of marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 mark.

b) Two mid tests will be conducted for each theory paper in each semester.  
 The average of the two will be taken for 20 marks.

## **Core Paper - 1**

### **EMT 101: MICROECONOMIC THEORY- I**

#### **Unit 1: Theory of Individual Decision Making**

Theory of Demand - Consumer equilibrium under Indifference Curve Analysis – Applications of Indifference Curves - Slutsky Theorem – Revealed Preference Hypothesis - Choice under Uncertainty- Recent Developments in the Theory of Market Demand.

#### **Unit 2: Theory of Production and Cost**

Concepts of Production Function – Homogeneous Production Function - Least Cost Combinations of Factors – Cobb-Douglas and CES Production Functions – Frontier Production Function - Properties - Laws of Returns to Scale - Theory of Cost – Traditional and Modern theories of Cost.

#### **Unit 3: Traditional Market Structures**

Perfect Competition - Equilibrium, Short Run and Long Run considerations, Efficiency and Welfare – Monopoly – Price and output determination - Price Discrimination - Welfare and Output.

#### **Unit 4: Modern Theories of Market**

Monopolistic competition – Collusive and Non- Collusive Oligopoly: Cournot, Bertrand Stackelberg models - Nash equilibrium - Kinked Demand curve and Price Leadership models.

#### **Unit 5: Limit Pricing and Managerial Theories of Firm**

Bain's Limit Pricing: Recent developments – Sylos-Labini and Franco Modigliani Models - Baumol's Sales Maximisation: Static single product model with and without advertisements – Marris' model of Managerial Enterprise.

#### **TEXT AND REFERENCE BOOKS:**

1. J.M. Henderson and R.E. Quandt (2003) Micro-economic Theory: A Mathematical Approach, Tata McGraw Hill publishing company Ltd.
2. Hal R. Varian (1995), Intermediate Micro-econometrics: A Modern Approach, East West Press.
3. A. Deaton and J. Muellbauer (1987) Economics and Consumer Behaviour, Cambridge University Press.
4. A. Koutsoyiannis, (1979), Modern Micro-economics, London: Macmillan.

## **Core Paper -2**

### **EMT 102: MACROECONOMIC THEORY-I**

#### **Unit 1: Macro-Economics**

Micro and Macroeconomics - Basic Concepts in Macroeconomics – Stocks and Flows - Statics, Comparative statistics and Dynamics – Micro Foundations of Macroeconomics – Circular flow of National income.

#### **Unit 2: National Income**

Definition – Concepts of National Income – Measurement of National Income – Factors determining National income – National Income and Social Accounting - Methods of Estimation – Problems in Estimation of National Income – National Income and Economic Welfare.

#### **Unit 3: Classical and Keynesian Economics**

Classical Theory of Employment – Critique of Classical Theory – Basic Keynesian Model – Consumption Function – Investment Multiplier – Accelerator – Interaction between Multiplier and Accelerator - Integration of Monetary theory and Value theory – Don Patinkin theory – The Real Balance Effect – Pigou Effect.

#### **Unit 4: Neo-Classical and Keynesian Synthesis**

The IS-LM model – Extension of IS & LM model with government sector – Relative effectiveness of Monetary and Fiscal Policies – Shifts in IS and LM curves.

#### **Unit 5: Savings & Investment**

Kinds of investment – Determinations of investment - Investment demand and Output growth – Marginal Efficiency of Capital – Tobin's 'Q' Theory – Lags in Investment demand.

#### **TEXT AND REFERENCE BOOKS:**

1. Edward Shapiro, Macroeconomic Analysis, Galgotia Publications, New Delhi.
2. Keynes, J.M. 1936, General theory of Employment, Interest and Money.
3. Gardener Ackley, 1978, Macro-economic Theory - Theory and policy, Macmillan, New Delhi.

## Core Paper - 3

### EMT 103: MATHEMATICAL METHODS

#### Unit 1: Basic Concepts and Set Theory

Exponents – Polynomials – Factorization of Equations — Sets - Meaning, Definition, Types of sets, set operations – Ordered Sets – Linear Point Sets - Cartesian product – Relation – Functions.

#### Unit 2: Functions and Limits

**Functions** - Type of Functions – Increasing and Decreasing – Implicit and Explicit – Constant, Linear, Quadratic, Logarithmic and Exponential functions – Graphical Representations of Functions – **Economic Applications of Functions - Limits:** Concepts of a Limit of a Function – Theorems on Limits of Functions – Evaluations of Limits in Simple Cases – Limits and Continuity of Functions.

#### Unit 3: Differential Calculus and Economic Applications (One Variable)

**Differential Calculus:** Meaning – Process of Differentiation – Rules of Differentiation – Differentiation of Logarithmic and Exponential Functions – Higher Order Derivatives – Maximum and Minimum Points – Points of Inflection - **Economic Applications:** Marginal concepts, Price and cross Elasticity of demand – Relationship among Total, Marginal, Average concepts – Optimizing Economic functions.

#### Unit 4: Integration and Economic Applications

Concept of an Indefinite Integral – Standard Integral Formula – Rules of Integration – Methods of integration – Concept of a Definite Integral – Area under a Curve – Fundamental theorem of Calculus – Properties of Definite Integral – Area between Curves; **Economic Applications:** Total Functions from Marginal Function – Consumer's and Producer's Surplus.

#### Unit 5: Matrices and Determinants

**Matrices:** Concept of a Matrix – Types of Matrices – Matrix Operations – **Determinants:** Properties of Determinants – Minors and Co-Factors – Evaluation of Determinants of Second and Third Order - Inverse of a Matrix – Solutions of Simultaneous Linear Equations involving two or three Variables by Matrix Inverse Method and Cramer's Rule – Characteristic roots and equations – Concept of a Quadratic form – Rank of a Matrix – Concept of g-inverse and c-inverse.

#### TEXT AND REFERENCE BOOKS:

1. Allen, RGD : Mathematical Analysis for Economists
2. Mehta, BC and Madanani GMK: Mathematics for Economists, Sultan Chand and Sons, Delhi
3. Taro Yamane: Mathematics for Economists (An Elementary Survey), Prentice Hall of India Private Ltd, New Delhi
4. Alpha C. Chang: Fundamental Methods for Mathematical Economics
5. Barry Bressler: A Unified introduction of Mathematical Economics.
6. Dowling, Edward T: Introduction to Mathematical Economics, (2/ed.), Schaum's Outlines, Mc. Graw Hill, 1980
7. Bose, D : An Introduction to Mathematical Economics, Himalaya Publishing Company, Delhi. Equations: Solution of Linear and Quadratic equations, solution of simultaneous equations,

## Core Paper - 4

### EMT 104: PRACTICAL – I FOR 100 MARKS IN MATHEMATICS AND STATISTICS

**Evaluation:** a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

### Compulsory Foundation

#### EMT 105 STATISTICAL METHODS

##### **Unit 1: Basics:**

Measures of Central Tendency – Measures of Dispersion – Coefficient of Variation, Skewness and Kurtosis – Numerical problems.

##### **Unit 2: Probability and Distributions:**

**Probability:** Concept of Probability – Axioms of Probability – Addition and Multiplication theorems – Bayes's Theorem - **Distributions:** Random Variables – Distribution Function – Probability Density Function - Mathematical Expectation – Binomial, Poisson, Normal and Lognormal distributions – Mean and Variance - Chief characteristics of Normal Distribution.

##### **Unit 3: Estimation and Testing of Hypothesis:**

**Estimation:** Introduction – Point and Interval Estimation - Estimators and their Properties: Consistency, Unbiasedness, Efficiency and Sufficiency - Method of estimation – Method of Least Squares and Method of Maximum Likelihood. **Tests of Hypothesis:** Statistical Hypothesis – Critical Region – Best Critical region – The Most Powerful Test - Types of errors - Large sample tests for means and proportions - Small sample tests based on t, F and Chi-square distributions.

##### **Unit 4: Sampling Theory:**

Need for sampling – Census Vs. Sampling - Types of sampling – Simple random sampling – Stratified random sampling – Systematic sampling – Two Stage sampling.

##### **Unit 5: Correlation and Regression:**

Simple Correlation – Computation – Properties - Rank Correlation - Regression Lines - Numerical problems – Concept of Partial and Multiple Correlations.

#### **TEXT AND REFERENCE BOOKS:**

1. S.C. Gupta and V.K. Kapoor: Elements of Mathematical Statistics.
2. Wonnacott & Wonnacott: Introduction to Statistical Methods.
3. Alexander M.Mood, Franklin A. Graybill and Duance C. Boes: Introduction to the Theory of Statistics. Third Edition. McGraw-hill Statistics Series, 1988.
4. S.P. Gupta: Introduction to Statistical Methods.
5. S.P. Gupta: Elements of Statistics.



## Elective Foundation

### EMT 106: HUMAN VALUES AND PROFESSIONAL ETHICS - I

**Unit-I:** Definition and Nature of Ethics- Its relation to Religion, Politics, Business, Legal, Medical and Environment. Need and Importance of Professional Ethics - Goals - Ethical Values in various Professions.

**Unit-II:** 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.

**Unit-III:** Ahimsa (Non- Violence), Satya (Truth), Brahmacharya (Celibacy), Asteya (Non-possession) and Aparigraha(Non- stealing). Purusharthas(Cardinal virtues)- Dharma (Righteousness), Artha(Wealth), Kama( Fulfillment Bodily Desires). Moksha(Liberation).

**Unit-IV:** Bhagavad Gita- (a) Niskama karma. (b) Buddhism- The Four Noble Truths – AryaAstangamarga, (c) Jainism- mahavratas and anuvratas. Values Embedded in Various Religions, Religious Tolerance, Gandhian Ethics.

**Unit-V:** Crime and Theories of punishment- (a) Reformative, Retributive and Deterrent. (b) Views on manu and Yajnavalkya.

#### REFERENCES:

1. John S Mackenjie: A manual of ethics.
2. "The Ethics of Management" by Larue Tone Hosmer. Richard D. Irwin Inc.
3. "Management Ethics' integrity at work' by Joseph A. Petrick and John F. Quinn. Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. Harold H. Titus: Ethics for Today
6. Maitra, S.K: Hindu Ethics
7. William Lilly: Introduction to Ethics
8. Sinha: A Manual of Ethics
9. Manu: Manava Dharma Sastra or the Institute of Manu: Comprising the Indian System of Duties: Religious and Civil (ed.) G.C.Halighton.
10. SusrptaSamhita: Tr.KavirajKunjanlal, KunjalalBrishagratha. Chowkarnba Sanskrit series. VolLII and III, Varnasi, Vol I 00,16'20,21-32 and 74-77 only.
11. CarakaSamhita :Tr.Dr. Ram Karan Sarma and VaidyaBhagavan Dash, Chowkambha Sanskrit Series office. Varanasi I, 11.111 VolIPP 183-191.
12. Ethics, Theory and Contemporary Issues. Barbara Mackinnon Wadsworth/Thomson Learning, 2001.
13. Analyzing Moral.Issues, Judith A. Boss. May Field Publishing Company - 1999.
14. An Introduction to Applied Ethics (Ed.) John H.Piet and Ayodhya Prasad. Cosmo Publications
15. Text Book for Intermediate First Year Ethics and Human Values. Board of Intermediate Education- Telugu ~ Akademi, Hyderabad.  
I.C Sharma Ethical Philosophy of India. Nagin& co Julundhar

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## Core Paper - 1

### EMT 201: MICROECONOMIC THEORY- II

#### Unit 1: Factor Markets

Factor Pricing: Marginal Productivity Theory of determination of Factor prices - Factor shares and the 'Adding up' problem - Euler's theorem - Pricing of factors under Imperfect Competition.

#### Unit 2: Functional Distribution

Theories of Rent: Concept of Rent – Ricardian theory of Rent – Quasi Rent, Theories of Wages: Wage determination under Perfect competition, Monopsony and Collective bargaining Bilateral Monopoly), Theories of Interest: Classical theory of interest – Loanable fund theory – Keynes liquidity preference theory of interest, Theories of Profit: Profit as dynamic surplus – innovations and profits – risk uncertainty and profits

#### Unit 3: Economics of Information

Basic Concepts of Economics of Information - Economic Value of information - Role of information in Economic theory – Information, a measure of risk - Bayes' Rule - Classical Paradoxes - Choice under Risk - Risk Allocation in Exchange Economies Model - Monopolist Insurer - Perfect Competition - Adverse Selection - Monopolistic Screening, Competition and Market Breakdown - Public Intervention - Brief introduction to Game theoretic approach to information use.

#### Unit 4: General Equilibrium

Meaning of Partial and General Equilibrium – Static and Dynamic Equilibrium – Stable and Unstable Equilibrium –Walrasian System of General Equilibrium - Existence and Stability of General Equilibrium - Externalities and Allocative Efficiency.

#### Unit 5: Welfare Economics

Welfare Economics – Criteria of Social Welfare – Adam Smith, Bentham, Pigou, and Cardinal school – Pareto Optimality in Consumption, Production and Distribution – Kaldor-Hicks Compensation Criteria- Bergson Social Welfare Function - Social Choice Theory, Coase and Sen.

#### TEXT AND REFERENCE BOOKS:

1. J.M. Henderson and R.E. Quandt (2003) Microeconomic Theory: A Mathematical Approach, Tata McGraw Hill publishing company Ltd.
2. Hal R. Varian(1995), Intermediate Micro economics: A Modern Approach, East West Press.
3. A. Deaton and J. Muellbauer(1987) Economics and Consumer Behaviour, Cambridge University Press.
4. A. Koutsoyiannis, (1979), Modern Microeconomics, London: Macmillan.
5. Macho-Stadler, I and D. PerezCastrillo (1997): "An Introduction to the Economics of Information", Oxford University Press.
6. J. Hirshleifer and J. Riley (1992): "The Analytics of Uncertainty and Information", Cambridge University Press
7. J.-J. Laffont (1989): "The Economics of Uncertainty and Information", MIT Press
8. L. Philips (1988): "The Economics of Imperfect Information", Cambridge University Press
9. T. Van Zandt (2006): "Introduction to the Economics of Uncertainty and Information"
10. K. Binmore (2011): "Rational Decisions", Princeton University Press
11. M. Osborne: "An Introduction to Game Theory", Oxford University Press.

## **Core Paper - 2**

### **EMT 202: MACROECONOMIC THEORY - II**

#### **Unit 1: Demand for and Supply of Money**

The Classical View- Neo-classical view-Quantity Theory of Money – Keynes and the Demand for Money - Post Keynesian theories of demand for money - Baumol , James Tobin and Friedman – Concept of Money Supply – Components of Money Supply – RBI approach to Money supply – High Power Money and Money Multiplier – Determinants of Supply of Money.

#### **Unit – 2: Macro Theories of Distribution**

Functional Versus Personal Distribution of Income - Micro versus Macro-theories of Distribution - Marxian, Ricardian, Kelecki Theories of Distribution - Alternate theories of distribution – Kaldor.

#### **Unit 3: Trade Cycles**

Meaning and Types of Trade Cycles – Different theories of Trade Cycles – Samuelson`s Model of Trade Cycle – Hicks` Theory Cycle – Kaldor`s Model of Trade Cycle – Control of Business Cycle – Monetary and Fiscal Policies.

#### **Unit 4: Theories of Inflation**

Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off - The Monetarists Accelerationists` Hypothesis – Rational Expectations Hypothesis – New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.

#### **Unit 5: Macroeconomic policies**

Objectives of Macroeconomic policies – Objectives of Monetary policy – The policy of Activists arguments – The policy of Non-activists arguments - Fiscal policy – objectives and tools - Automatic stabilizers – Problems of using of Fiscal policies – Effectiveness of Monetary and Fiscal policies –The concept of Open Economy macroeconomics.

#### **TEXT AND REFERENCE BOOKS:**

1. Ackley, G. Macroeconomic theory, Macmillan
2. Edward Shapiro, Macroeconomic Analysis, 5<sup>th</sup> edition, New-Delhi Galgotia publications.
3. Branson, W.B., Macro Economic Theory and Policy.
4. Gupta, S.B., 1983, Monetary Economics, Chand and Co.
5. Hicks, J.R., Mr. Keynes and the Classics; A suggested Interpretation, Econometrics,
6. Laidler, D.E.W., Demand for money.
7. Friedman, M. (ed), The quantity theory of money – A Restatement of studies in the quantity theory of money.
8. Patinkin, Don., Money, Interest and Prices.
9. Rosalind Levacic and Alexander Rebthann, 1982, Macroeconomics; The English Language Book Society and Macmillan.
10. Rongar L. Miller and Robert Pulsinelli, Macroeconomics.

## **Core Paper - 3**

### **EMT 203: BASIC ECONOMETRICS**

#### **Unit 1: Nature of Econometrics and Economic Data**

Definition of Econometrics – Steps in Empirical Economic Analysis - Econometric Model – The Role of Measurement in Economics – The Structure of Economic Data: Cross-Sectional data, Time Series data, Pooled Cross Section data, Panel Data.

#### **Unit 2: Simple Regression Model**

Two Variable Linear Regression Model: Assumptions, Estimation of Parameters, Tests of Significance and Properties of Estimators – Functional forms of Regression models – Log-linear models, Semi log- models and Reciprocal models – Choice of Functional Form.

#### **Unit 3: The General Linear Model**

Review of Assumptions, Estimation and Properties of Estimators: Un-biasness, BLUEs and Tests of significance of estimates – Analysis of Variance - **Dummy variables** - Nature of Dummy variables – Use of Dummy Variables – Errors in Variables and its consequences.

#### **Unit 4: Auto-regressive and Distributed Lag Models**

Introduction – Types of Lag schemes - Koyck's lag model, Almon's Lag scheme, Partial Adjustment and Expectations models - Causality in Economics – The Granger Causality Test.

#### **Unit 5: Simultaneous Equation Models**

Specification – Simultaneous Bias – Inconsistency of OLS Estimators - The concept of Identification, Rank and Order conditions for Identification – Indirect Least Squares - Two stage Least Squares (without proof), Problems.

#### **TEXT AND REFERENCE BOOKS:**

1. Johnston, J: Econometric Methods, McGraw-Hill Book Co., New York.
2. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3<sup>rd</sup> Ed.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, Tata McGraw-Hill, New Delhi.
4. Tintner, G: Econometrics, John Wiley & Sons, New York.
5. Wooldridge, Jeffery M: Econometrics, Cengage Learning India Pvt. Ltd, New Delhi.

## Core Paper - 4

### EMT 204 PRACTICAL – II FOR 100 MARKS IN BASIC ECONOMETRICS AND MATHEMATICAL ECONOMICS

**Evaluation:** a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

#### Compulsory Foundation

### EMT 205: MATHEMATICAL ECONOMICS

#### Unit 1: Differential Calculus and Economic Applications (Two or More Variables)

**Differential Calculus:** Functions of two or more variables and Partial Derivatives – Rules of Partial Differentiation – Second-Order Partial Derivatives – Optimization of Multivariable Functions – Constrained Optimization with Lagrange Multipliers – Significance of Lagrange Multiplier – Differentials – Total and Partial Differentials – Homogeneous Functions – Euler’s Theorem – Partial Elasticities; **Economic Applications:** Maximization of Utility – Minimization of Cost – Maximization of Cost, Profit – Elasticity of Substitution

#### Unit 2: Differential Equations and Economic Applications

Definitions and Concepts – Linear Differential Equations of the First and Second Order with constant coefficient – Non-linear Differential equations of First-Order and First Degree – Variable Separable Case, Differential Equations with homogeneous equations - Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.

#### Unit 3: Difference Equations and Economic Applications

Definitions and Concepts – 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 – Dynamic Multiplier – Multiplier Acceleration Model : Harrod Domar Model – Multiplier’s Accelerator Interaction Model of Samuelson.

#### Unit 4: Input-Output Analysis

Assumptions - Technological Co-efficient Matrix – Closed and open Model – Solution of Open Model – Hawkins-Simon Conditions – Dynamic Input-Output Model – Production Function Approach to Input Output Model.

#### Unit 5: Linear Programming

Basic Concepts – Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.

#### TEXT AND REFERENCE BOOKS

1. Allen, RGD: Mathematical Analysis for Economists.
2. Mehta, BC and Madanani GMK: Mathematics for Economists, Sultan Chand and Sons, Delhi.
3. Taro Yamane: Mathematics for Economists (An Elementary Survey), Prentice Hall of India Private Ltd, New Delhi.
4. Alpha C. Chang: Fundamental Methods for Mathematical Economics.
5. Barry Bressler: A Unified introduction of Mathematical Economics
6. Dowing, Edward T: Introduction to Mathematical Economics, (2/ed.), Schaum’s Outlines, McGraw Hill, 1980.
7. Bose, D: An Introduction to Mathematical Economics, Himalaya Publishing Company, Delhi.

## **Elective Foundation**

### **EMT 206: HUMAN VALUES AND PROFESSIONAL ETHICS - II**

Unit-I: Value Education- Definition - relevance to present day - Concept of Human Values - self introspection – Self-esteem - Family values-Components, structure and responsibilities of family- Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

Unit-II: Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and healthcare professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Social justice in health care, human cloning, problems of abortion. Ethical issues in genetic engineering and Ethical issues raised by new biological technology or knowledge.

Unit-III: 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.

Unit-IV: Environmental ethics- Ethical theory, man and nature- Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population, Justice and environmental health.

Unit-V: Social ethics- Organ trade.Human trafficking.Human rights violation and social disparities, Feminist ethics.Surrogacy/pregnancy. Ethics of media- Impact of Newspapers, Television, Movies and Internet.

#### **REFERENCES:**

1. John S Mackenjie: A manual of ethics.
2. "The Ethics of Management" by Larue Tone Hosmer. Richard D. Irwin Inc.
3. "Management Ethics' integrity at work' by Joseph A. Petrick and John F. Quinn. Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. Manu: Manava Dharma Sastra or the Institute of Manu: Comprising the Indian System of Duties: Religious and Civil (ed.) G.C.Halighton.
6. SusrptaSamhita: Tr.KavirajKunjanlal, KunjalalBrishagratha. Chowkarnba Sanskrit series. VolLII and III, Varnasi, Vol I 00,16'20,21-32 and 74-77 only.
7. CarakaSamhita :Tr.Dr. Ram Karan Sarma and VaidyaBhagavan Dash, Chowkambha Sanskrit Series office. Varanasi I, 11.111 VolIPP 183-191.
8. Ethics, Theory and Contemporary Issues. Barbara Mackinnon Wadsworth/Thomson Learning, 2001.
9. Analyzing Moral.Issues, Judith A. Boss. May Field Publishing Company - 1999.
10. An Introduction to Applied Ethics (Ed.) John H.Piet and Ayodhya Prasad. Cosmo Publications
11. Text Book for Intermediate First Year Ethics and Human Values. Board of Intermediate Education- Telugu ~ Akademi, Hyderabad.
12. I.C Sharma Ethical Philosophy of India. Nagin& co Julundhar

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## Core Paper -1

### EMT 301: ADVANCED ECONOMETRICS

#### Unit 1: Multicollinearity and Heteroscedasticity

Multicollinearity: Source and Consequences, Tests for Multicollinearity and solutions for Multicollinearity. Heteroscedasticity: Sources and Consequences, Tests for Heteroscedasticity, Generalized Least Squares Method of Estimation.

#### Unit 2: Autocorrelation

Sources of Autocorrelation - first order Autoregressive scheme - Consequences of Autocorrelation - Tests for Autocorrelation – Durbin-Watson test - Methods of estimation of Autocorrelation coefficient -Estimation from d- statistic and Cochran-Orcutt iterative method.

#### Unit 3: Unit 3: Qualitative and Limited Dependent Variables Models

Binary Choice Models: Linear Probability Model, Probit Model and Logit Models – Censored and Truncated regression models.

#### Unit 4: Simultaneous Equation Models: Estimation Methods

Two stage Least Squares, Limited Information Maximum Likelihood, K-class Estimators, Three Stage Least Squares and Full Information Maximum Likelihood Methods – Numerical Problems.

#### Unit 5: Panel Data Regression Models and Time Series Econometrics

Panel Data – Estimation of Panel Data Regression Models - Fixed and Random Effects – Estimation – Introduction to Time Series Econometrics - Stationary and Non-Stationary Stochastic Process – Integrated Stochastic Process – Unit roots – Co-integration – Test for co-integration, Co-integration and error correction mechanism.

#### TEXT AND REFERENCE BOOKS:

1. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3<sup>rd</sup> Rd.
2. Johnston,J: Econometric Methods, McGraw-Hill Book Co., New York.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, New Delhi.
4. Maddala, G.S: Limited-Dependent and Qualitative Variables in Econometrics, Cambridge University Press.

## Core Paper - 2

### EMT 302 OPTIMIZATION IN ECONOMICS

#### Unit 1: Transportation Problem

Nature and Matrix form of TP – Transportation Table – Types of Transportation Problem – Balanced Transportation Problem, Unbalanced Transportation Problem – Methods to solve Transportation Problem - The Initial Basic Feasible solution: North-West Corner Rule and Vogel's Approximation method – Moving towards optimality, the Transportation Algorithm.

**Unit 2: Assignment Problem:** Assignment problem, Transportation problem and Linear Programming – Types of Assignment problem – Properties of Optimal Solution – Solving the Assignment Problem by Hungarian Algorithm – The Auction Algorithm for Assignment Problem – Branch and Bond Techniques for Assignment Problem.

**Unit 3 : Game Theory:** Basic concepts -Two-person Zero Sum Games - The Maximum Minimax Principle – Games without Saddle Points – Mixed Strategies – Graphical solution of  $2 \times n$  and  $m \times 2$  Games – Dominance property – The Modified Dominance Property – Reducing the Game Problem as a Linear Programming Problem.

#### Unit 4 : Inventory Management

Introduction - Inventory control - Techniques of Inventory control with known demand - Economic Lot Size Problems –The fundamental Problem of Economic Order Quantity (EOQ), The Problem of EOQ with Uniform Demand, and The Problem of EOQ with Finite Rate of Replenishment - Problem of EOQ with Shortage.

#### Unit 5: Simulation

Introduction – Elements of a Simulation Model – Event – Types of Simulation – Generation of Random Phenomena – Monte Carlo Technique – Generation of Uniform (0,1) Random Observations – Simulation languages.

#### TEXT AND REFERENCE BOOKS:

1. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research, Sultan Chand and sons, New Delhi.
2. Panneerselvam, R: Operations Research, Eastern Economy Edition, Prentice Hall of India, New Delhi, 2007.
3. Srinivasan, G., Operations Research \_Principles and Applications, Second Edition, Prentice Hall of India, New Delhi, 2012.
4. Richard, Brown and Govindaswamy, N., Schaum's Outlines Series Operations Research, Second Edition, 2012.
5. Gupta, P.M. and D.S.Hira: Operations Research, Sultan Chand and Sons, New Delhi.
6. Harven, Wagner: Operations Research.
7. Starr and Miller: Inventory Control.



## Core Paper - 3

### EMT 303 : PRACTICAL – III FOR 100 MARKS IN ADVANCED ECONOMETRICS, OPTIMIZATION IN ECONOMICS AND COMPUTER APPLICATIONS

**Evaluation:** a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

### Generic Elective -1

#### EMT 304: COMPUTER APPLICATIONS AND DATA ANALYSIS

##### Unit 1: Computer Fundamentals

Definition - Components of a computer-block diagram – Evolution of computer – Generations – input/output devices – storing information in computer – types of computers – Hardware and Software – Compilers and Assemblers – Low level and high level languages – Operating systems and the graphic user interface – Microsoft Windows operating system.

##### Unit 2 : MS-WORD

Creating, opening and saving files - editing and formatting text - spell and grammar check – auto correct- hyphenation – creating of tables and columns - mail merge - equation editor – concept of a macro - print preview.

##### Unit 3: MS-EXCEL

Work sheet – entering data – creation of worksheets and workbooks – opening and saving workbooks - editing and formatting - sorting, filtering and pivot tables - Creating graphs and charts - mathematical and statistical functions - Data analysis pack in Excel - Descriptive statistics, tests of hypothesis, ANOVA, Correlation and Regression, Random Number Generation.

##### Unit 4: Data Handling Using SPSS

Opening Excel files in SPSS - Variables, labels and values, Analysis tools - Descriptive statistics - Selection of variables in multiple linear regression - Stepwise, forward and backward procedures - Factor analysis and Discriminant analysis (Stress on procedures and syntax only).

##### Unit 5: Data Analysis using R

R environment – Workspace, Getting help, Packages and Built-in data - Assigning values, performing vectorized arithmetic - Creating objects, vectors, lists, matrices, arrays and data frames - Conditional selection, sorting and indexing data frames, implicit looping - Importing data - Branching and looping statements - plotting data – Bar plots, Pie charts, Histogram, Box plots - Summary statistics - Generating samples from discrete and continuous distributions - Simple correlation and regression - Testing hypothesis of mean and variance, Analysis of variance.

#### TEXT AND REFERENCE BOOKS:

1. Shelly and Hunt, Computers and Common Sense, Prentice Hall of India, New Delhi.
2. Rajaraman V, Fundamentals of Computers, Prentice Hall of India, New Delhi.
3. Peter Dalgaard (2008): Introductory Statistics with R, 2<sup>nd</sup> Edition, Springer, New York. (Chapters 1, 2, 3,4,5,6 and 7)
4. Peter Norton's Introduction to computers, Tata McGraw Hill Publishing Co., New York.
5. Foster,J.J.(2001), Data Analyzing using SPSS For Windows 8.0 – 10.0, A Beginner's Guide.
6. M. Crawley, Basic Statistics: An Introduction using R.
7. B.S. Everitt & T. Hothorn, A Handbook of Statistical Analyses Using R (2nd Ed.).
8. J. Maindonald & J. Braun, Data Analysis and Graphics Using R: An Example-based Approach.
9. P. Murrell, R Graphics (2nd Ed.).

## Generic Elective – 2

### EMT 305 PUBLIC FINANCE

#### Unit 1: Scope and Structure of Public Finance

Nature, Scope and Importance of Public Finance - Public Finance and relationship with other Sciences - Distinction between Public and Private Finance - Principles of Public Finance - Principle of Opportunity Cost in Public Finance - Theory of Public Goods and Merit Goods - Role of Public Finance in Developing Economies and Underdeveloped Countries.

#### Unit 2: Public Expenditure

Introduction - Difference between Public and Private Expenditure - Reasons for growth of Public Expenditure - Classification and Canons of Public Expenditure - Effects of Public Expenditure - Wagner's Law of Increasing State Activities - Peacock and Wiseman Hypothesis - Controls and Accountability of Public expenditure in India

#### Unit 3: Public Revenue and Taxation

Sources of Public Revenue - Classification of Public Revenue - Principle of Public Revenue - Effects and significance of Public Revenue - Characteristics of Good Tax system in India - Canon of Taxation - Classification of Taxation - Benefit (Modern) theories of Taxation - Ability to Pay Theory - Taxable Capacity - Value Added Taxation (VAT) and GST Principle and Issues – Indian Tax Structure – Incidence and Effects of Taxation.

#### Unit 4: Public Debt

Classification of Public Debt - Causes of Public Debt - Objectives of Public Debt - Effects of Public Debt - Burden of Public Debt - Public debt Management - Public Debt in India.

#### Unit 5: Budget and Federal Fiscal Systems

Introduction – Definitions of Primary deficit, Revenue deficit, Budgetary deficit and Fiscal deficit - Budget classification - Zero Base Budgeting - Fiscal Deficit and Budgetary Deficit in India – FRBM -Centre-State Financial relations in India –Functions of Finance Commission - Recommendations of 13<sup>th</sup> and 14<sup>th</sup> Finance Commissions.

#### TEXT AND REFERENCE BOOKS:

1. B.P.Tyagi, Public Finance, Jai Prakash & Company, Meerut, 2008.
2. Bhargava .R.N, the Theory and Practice of Union Finance in India, Chaitanya Publishers, Allahabad, 1998.
3. Dalton.H, Principle of Public Finance, Allied Publishers, Bombay, 1992.
4. Dwevedi.P.N, Reading in Indian Public Finance, Chanakya Publications, New Delhi, 2006.
5. Lakadawala.D.T, Union State Financial Relations, Lalwani Publishers House, Mumbai, 1986.
6. Mathew.T, Tax Policy, Some Aspects of Theory and Policy, Chanakya Publications, New Delhi, 2001.
7. Mundle.Sudipto.(ed), Public Finance, Policy Issues for India, Oxford University, Press, 1999.
8. Musgrave.R.A, The Theory of Public Finance- A Study of Public Finance, McGraw hill company, Tokyo, 1999.
9. R.K.Lekhi, Public Finance, Kalyani Publishers, New Delhi, 2007.

## **Generic Elective – 3**

### **EMT 306: ECONOMICS OF DEVELOPMENT AND PLANNING**

#### **Unit 1: Concepts and Measurement of Economic Growth and Development**

Economics of Development and Growth - Problems and Causes of Underdevelopment and Development - Factors of Economic Growth - Obstacles to Economic Development - Vicious Circle of Poverty - Characteristics of Modern Economic Growth - Measures of Economic Growth and Economic Development, HDI and PQLI.

#### **Unit 2: Theories of Growth and Development**

Classical, Karl Marx and Schumpeter - Joan Robinson Golden Age model, Harrod-Domar model, Rostow Stages of Growth - Lewis theory of Surplus Labour - Rodan's Big Push theory - Nurkse Balanced Growth theory - Hirschman's Unbalanced theory - Ranis - Fei Model - Dependency Theory of Development.

#### **Unit 3: Domestic Factors in Economic Development**

Capital Formation and Economic Development- Role of Agriculture and Industry in Economic Development - Population Growth and Economic Development - Human Capital Formation and Man Power Planning - Entrepreneurship in Economic Development - Role of Technology in Economic Development.

#### **Unit 4: Trade and Development**

Role of Foreign Trade in Economic Development - Trade as an Engine of Economic Growth - Two Gap Model - Objectives and Role of Monetary and Fiscal Policies in Economic Development - Commercial Policy and Economic Development - Price Policy and Economic Development.

#### **Unit 5: Planning Techniques and Planning in India**

Capital-Output Ratio - The Choice of Techniques and Appropriate Technology - Investment Criteria - Elements of Cost-Benefit Analysis - Poverty, Unemployment and Economic Inequalities in India - Role of Public Sector in India - Role of Foreign Aid and Foreign Capital in India.

#### **TEXT AND REFERENCE BOOKS:**

1. Kindleberger.C.P, Economic Development, Mc Graw Hill Company, New York, 1988.
2. Lewis.W.A, The Theory of Economic Growth, George Allen and Unwin, London, 1998.
3. Michel.P.Todero & Stephen C.Smith, Economic Development, Pearson Education (Singapore) Limited, New Delhi, 1998.
4. S.K.Misra and V.K. Puri, Economics of Development and Planning, Himalaya Publishing House, New Delhi, 2006.
5. Solow.R.M, Growth Theory: An Exposition, Oxford University Press, New York, 2000.

## Generic Elective - 4

### EMT 307: FINANCIAL INSTITUTIONS AND MARKETS

#### Unit 1: Financial System

Evolution of Financial System – Structure of Financial System – Functions of Financial System – Financial System and Economic Development.

#### Unit 2: Money Market

Features of Money Market – Instruments of Money Market: Call Money Market – Treasury Bills Market – Commercial Bills – Market for Commercial Papers – Certificate of Deposits – Discount and Finance House of India (DFHI) – Securities Trading Corporation of India (STCI) – Deficiencies and Recent Developments in Indian Money Market.

#### Unit 3: Capital Market

Industrial Securities Market: Primary and Secondary Markets – Government Securities Market and Long Market – Objectives, Functions and performance of Securities and Exchange Board of India (SEBI) – Over the Counter Exchange of India (OCTCEI) – Functions of Stock Exchanges – Bombay Stock Exchange (BSE) – National Stock Exchange (NSE) – Reforms in Capital Market.

#### Unit 4: Banking and Financial Institutions

**Banking:** Central Banking: Objectives and Functions - Commercial Banks, Functions and Growth - Process of Credit Creation – Growth and Control of Non-banking Financial Institutions - Functions and Performance of Industrial Finance Corporation of India (IFCI) – Industrial Development Bank of India (IDBI) – Industrial Credit and Investment Corporation of India (ICICI) – Small Industrial Development Bank of India (SIDBI) – State Financial Corporations (SFCs) – Mutual Funds.

#### Unit 5: Investment Institutions and Foreign Capital

Functions and Performance of Life Insurance Corporation (LIC) – General Insurance Corporation (GIC) and Unit Trust of India (UTI) – Forms of Foreign Capital – International Financial Instruments – Trends in Foreign Capital Inflows to India – Advantages and Disadvantages of Foreign Capital.

#### TEXT AND REFERENCE BOOKS:

1. M.Y. Khan, Indian Financial System, Tata Mc Graw Hill, New Delhi.
2. L.M.Bhole, Financial Institutions and Markets, Tata Mc Graw Hill, New Delhi.
3. V.A.Avadhani, Indian Capital Market, Himalaya Publishing House, Bombay.
4. H.R.Machiraju, International Financial Markets and India, Wheeler Publishing Company, New Delhi.
5. Vasant Desai, Indian Financial System, Himalaya Publications, Bombay.
6. Peter.S. Rose, Money and Capital Market: Financial Institutions and Instruments, Tata McGraw Hill, London.
7. S.C.Kucchal, Corporation Finance, Chaitanya Publishing, Allahabad.
8. S.L.N.Sinha, Capital Market in India, Vora & Co, Bombay.
9. Hendrik.S. Houthakker, The Economics of Financial Markets, Oxford University Press, New Delhi.

## Open Elective – 1

### EMT 308: INTRODUCTION TO ECONOMETRICS

#### Unit 1: Nature of Econometrics and Economic Data

Definition of Econometrics – Steps in Empirical Economic Analysis - Econometric Model – The Role of Measurement in Economics – The Structure of Economic Data: Cross-Sectional data, Time Series data, Pooled Cross Section data, Panel Data.

#### Unit 2: Simple Regression Model

Two Variable Linear Regression Model: Assumptions, Estimation of Parameters, Tests of Significance and Properties of Estimators – Functional forms of Regression models – Log-linear models, Semi log- models and Reciprocal models – Choice of Functional Form.

#### Unit 3: The General Linear Model

Review of Assumptions, Estimation and Properties of Estimators: Un-biasness, BLUEs and Tests of significance of estimates – Analysis of Variance - **Dummy variables** - Nature of Dummy variables – Use of Dummy Variables – Errors in Variables and its consequences.

#### Unit 4: Auto-regressive and Distributed Lag Models

Introduction – Types of Lag schemes - Koyck's lag model, Almon's Lag scheme, Partial Adjustment and Expectations models - Causality in Economics – The Granger Causality Test.

#### Unit 5: Simultaneous Equation Models

Specification – Simultaneous Bias – Inconsistency of OLS Estimators - The concept of Identification, Rank and Order conditions for Identification – Indirect Least Squares - Two stage Least Squares (without proof), Problems.

#### TEXT AND REFERENCE BOOKS:

1. Johnston, J: Econometric Methods, McGraw-Hill Book Co., New York.
2. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3<sup>rd</sup> Ed.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, Tata McGraw-Hill, New Delhi.
4. Tintner, G: Econometrics, John Wiley & Sons, New York.
5. Wooldridge, Jeffery M: Econometrics, Cengage Learning India Pvt. Ltd, New Delhi.

**Open Elective - 2**  
**EMT 301: INDIAN ECONOMY**

**Unit 1: Structure of the Indian Economy**

Indian Economy on the Eve of Independence- Basic Characteristics of the Indian Economy as Developing Economy - Major issues of Development in Indian Economy- Growth and Structural Changes in the Indian Economy - Population- Poverty – Measurement of Poverty, Anti Poverty Programmes - Inequality- Natural Resources - Infrastructure- Human Development in India-Prices, Price Policy and Economic Growth - Balanced Regional Development - Unemployment in India.

**Unit 2: Agricultural Sector**

Role Agriculture in Indian Economy - Share of Agriculture - Interrelationship between Agriculture and Industry – Land Tenure System - Farm Size and Productivity - Institutional and Technological Aspects - New Agricultural Policy - Food Security in India - Rural Credit - Agricultural Marketing - Regional Disparities in Indian Agriculture - Irrigation and other Agricultural Inputs.

**Unit 3: Industrial Sector**

Industrial Structure and Economic Growth - Large and MSMEs - Industrial Labour Problems and Labour Policy - Industrial Sickness Causes and Remedial Measures - Economic Reforms and Industrial Growth - Pattern of Industrialization - Public and Private Industrial Finance in India - Unorganized Sector and Informalisation of the Indian Economy.

**Unit 4: Tertiary and Foreign Sectors**

Service Sector - Role, Growth and Structure of Service Sector in India – Growth, Composition and Direction of India's Foreign Trade – Trade Policy and its Reforms in India – India's Balance of Payments - WTO and Indian Economy.

**Unit 5: Planning and Development**

Objectives and Strategy of Planning - Public Sector and Indian Planning- Re-Organization of Planning Commission ( NITI Aayog) - Privatization and Globalization and its impact on India - Government Subsidies in India - Problems of Capital Formation - Foreign Capital, Foreign aid and Economic Development in India.

**TEXT AND REFERENCE BOOKS:**

1. Ghosh. Alak, Indian Economy – Its Nature and Problems, A New Look Indian Economics, Calcutta, The World Press Private Limited, 1989.
2. Jalan.B, The Indian Economy Problems and Prospects, Viking Publications, New Delhi, 2006.
3. Ruddar Datt and Sundaram. K.P.M, S.Chand and Company, New Delhi, 2008.
4. S.K.Misra and V.K. Puri, Indian Economy, Himalaya Publishing House, New Delhi, 2006.
5. Sen R.K and B.Chatterjee, Indian Economy-Agenda for 21<sup>st</sup> Century, Deep and Deep Publications, New Delhi, 2001.
6. Uma Kapila, Indian Economy Since Independence, Agricola Publications Academy, New Delhi, 1998.

**Open Elective - 3**  
**EMT 310: ECONOMICS OF INSURANCE**

**Unit 1: Element of Risk and Risk Management**

Fundamental of Risk and Uncertainty – Classification of Risk – Risk Pooling and Risk Transfer - Concept of Risk Management – Essentials and Elements of Risk Management – Risk Assessment and Risk Control.

**Unit 2: Risk and Insurance**

Definition of Insurance – Role and Functions of Insurance – General and Specific Principles of Insurance Contract – Insurance and Economic Development – Insurance as Financial Intermediaries and Investment Institutions – Classification of Insurance - The Concept of Re-insurance.

**Unit 3: Life and Health Insurance**

Fundamental Principles of Life and Health Insurances – Functions of Life and Health Insurances – Plans of Life and Health Insurance – The Process of Underwriting Life and Health Insurance- Group Insurance

**Unit 4: General and Other Types of Insurance**

Definition of General Insurance – Marine, Motor Vehicular, Fire and other types of Insurances –Physical and Moral Hazards in General Insurance – The General Insurance Corporation (GIC Re) and General Insurance Companies, NOUN – Growth of General Insurance business in India.

**Unit 5: Regulation of Insurance**

Organization and Growth of LIC - Monopoly of LIC - Need for Insurance Regulation in India - Functions and Duties of Insurance Regulation and Development Authority (IRDA) of India — Entry of Private and Foreign Insurance Companies – Implications – Prospects of Insurance Companies.

**TEXT AND REFERENCE BOOKS:**

1. Misra, M. N. and V. K. Puri, (2008), Insurance Principles and Practice, New Delhi: S. Chand.
2. Periasamy, P. (2007), Principles and Practice of Insurance, Mumbai: Himalaya Publishing House.
3. Palande, P. S., Shah, R. S. and Lunawal, M. L. (1983), Insurance in India, Changing Policies and Emerging Opportunities, New Delhi: Response Books, A Division of Sage Publications.
4. Bhole, L. M. (1990), The Indian Financial System, New Delhi: Tata McGraw Hill.
5. Black, K. Jr. and H. D. (2000), Life and Health Insurance, New Jersey: Prentice Hall.
6. Bailey, R. (1999), Underwriting and Life and Insurance, Atlanta: LOMA.
7. Bickelhaupt, D. L. (1992), General Insurance, Burr Bridge: Irwin Inc.
8. Hedad, G. L. AND Horn I. I. (1991), Essentials of Risk Management, Vol. I Insurance Institute of America.

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## **Core Paper-1**

### **EMT 401: APPLIED ECONOMETRICS**

#### **Unit 1: Demand Analysis**

Demand functions – Restrictions to be satisfied by Demand functions - Single Equation models, Engel Functions and Curves, Specification of Functional forms and Estimation – Linear Expenditure System - Review of Empirical Studies.

#### **Unit 2: Consumption Function**

Theories of Consumption Function – Alternative specifications – Absolute Income Hypothesis, Relative Income Hypothesis, Life Cycle Hypothesis, Permanent Income Hypothesis – Problems of Estimating the Consumption Function – Review of some empirical studies.

#### **Unit 3: Production Functions**

Single Equation Estimation of production functions - Cobb-Douglas, CES, Trans-log – Specifications and Estimation issues – Review of Empirical studies – Functional forms and Estimation of Cost Functions - Estimation of Factor demand Equations - Empirical Studies.

#### **Unit 4: Macro Econometric Models**

Nature of Simultaneous Macro Econometric Models – Klein-Goldberger Model for USA - Brookings Model – Macro Econometric models for India – Agarwal, K. Krishna Murthy and N.V. A. Narasimhan Models.

#### **Unit 5: Other Applications of Single and Simultaneous Equation Models**

Models of Money Demand and Supply – Estimation of Demand for Money Function – Application in Industrial Organization, Labour Economics and Health Systems – Review of Empirical Studies.

#### **TEXT AND REFERENCE BOOKS:**

1. Intriligator, M. D. (1978) *Econometric Models, Techniques and Applications*, North-Holland.
2. ICSSR Survey of Economics – Vol.7 (Econometrics) Allied Publishers
3. Deaton A. and John Muellbauer, *Economics and Consumer Behaviour* – Cambridge University Press, 1987
4. Killingsworth Mark R.- *Labour Supply*, Cambridge University Press 1985
5. Meghnad J.Desai 1973 – *Macro-economic models for India: A Survey* – Sankhya series-B 85 – PP 169-205



## Core Paper-2

### EMT 402: TIME SERIES ECONOMETRICS

#### Unit 1: Basic concepts

Introduction – Stationary Stochastic Process – Non-stationary Stochastic Process; Unit root Stochastic Process, Integrated Stochastic Process, tests of Stationarity.

#### Unit 2: Co-integration

Integrated Variables, Unit root tests - Dickey-Fuller tests; Co-integration and error correction mechanism – Engle–Granger, Johansen and Juselius Co-integration tests – ARDL Co-integration Tests.

#### Unit 3: Forecasting

Nature and uses of Forecasts – Forecasting with a single-equation linear regression model -Forecasting with a multi-equation econometric model - Evaluation of the forecasting power of a model – Conditional and Unconditional Forecasting – Single and Double exponential smoothing – Box-Jenkins Model.

#### Unit 4: Linear Time Series Models

Univariate Time Series Models - Moving Average Models - Auto Regressive Models - Mixed Auto Regressive Moving Average Models – ARIMA models.

#### Unit 5: Vector Auto-regressions and Models for Volatility

Estimation and Forecasting with VAR, VAR and Causality, Some problems with VAR Modeling, Measuring Volatility - The ARCH (p) models – ARCH tests – GARCH (p, q) model – Asymmetric GARCH models.

#### TEXT AND REFERENCE BOOKS:

1. Gujarathi, D.N, Basic Econometrics, Fourth Edition, Tata McGraw Hill, New Delhi, 2004.
2. Koutsoyiannis, A, Theory of Econometrics, The Macmillan Press Ltd., Hong Kong, Second Edition, 1983.
3. Robert S.Pindyck and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts, McGraw Hill Book Company, 1988
4. Francis Diebold, Elements of Forecasting, South Western College Publishing, 1998.
5. Newbold and Bos, Introductory Business and Economic forecasting (second edition), South Western College Publishing, 1994.
6. William H. Green, Econometric Analysis, Pearson's Education, fifth Edition, 2003.
7. Hamilton, J.D, Time Series Analysis, Princeton, N.J., Princeton University Press, 1994.

**Core Paper-3**  
**EMT 403 PRACTICAL – IV FOR 100 MARKS IN**  
**APPLIED ECONOMETRICS AND TIME SERIES ECONOMETRICS**

**Evaluation:** a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

b) Two mid tests will be conducted for each theory paper in each semester. The average of the two will be taken for 30 marks.

**Generic Elective – 1**  
**EMT 404: INTERNATIONAL TRADE AND FINANCE**

**Unit 1: Old and New Theories of International Trade**

Comparative advantage in Ricardian, Haberler and Heckscher–Ohlin Theories – Factor Price Equalization Theorem - Intra Industry Trade – Neo-Chamberlin and Neo-Heckscher-Ohlin Theorems - Product Cycle and Technology Gap and Strategic Trade theories.

**Unit 2: Free Trade and Protection**

Free Trade vs. Protection – Theory of Tariffs – The Political Economy of Non-tariff Barriers - Terms of Trade – Secular Deterioration (Singer-Prebisch) Thesis - Immiserizing Growth - The Concept of Customs Union - Regional Trade Agreements - EU and SAARC.

**Unit -3: Balance of Payments and adjustment Mechanism**

Balance of Payments Accounts – Adjustment of Deficit in Balance of Payments – Traditional Elasticity and Absorption Approaches - Theories of policy mix - BOP adjustments with capital mobility – Foreign Trade Multiplier.

**Unit 4: Theories of Exchange rate determination**

Exchange rate under free market – Spot and Forward Rates - Exchange rate adjustments under capital mobility - Floating Rates and their implications for developing countries - Currency Boards - Import and Exchange Controls and Multiple Exchange Rates.

**Unit 5: Global Institutions**

The Bretton Woods System - IMF and World Bank – Collapse of Bretton Woods System – New International Monetary Order – WTO – Issues at the recent WTO ministerial Conferences- Multinational Corporations - Implications for Developing countries

**TEXT AND REFERENCE BOOKS:**

1. Paul Krugman & Maurice Obstfeld (6<sup>th</sup> ed.) International Economics, (Chapters 2-11) Addison Wesley, 2003.
2. Caves, R. and Jones, R. World trade and payments (chapters 4, 6, and 7). Boston: Little, Brown and Company, 1977.
3. Sodersten, B. and Reed, G. International economics (chapters 1-11, 13-16, 19, 20, 22-24, 26 & 27). Macmillan Company, 1994.
4. Pilbeam, K. International finance (chapters 4-15). Macmillan, 1994.
5. Turnovsky, S. J. Macroeconomic analysis and stabilization policy (chapters 9-12). Cambridge University Press, 1977.
6. Dixit, A. and Norman, V. The theory of international trade. Cambridge University Press, 1980.
7. Grossman, G. M. and Rogoff, K., eds. Handbook of international economics. Vol III. Elsevier, 1995.
8. Kierzkowski, H., ed. Protection and competition in international trade. New York: Blackwell, 1987.
9. Bhagwati, J, Arvind Panagariya, & T.N. Srinivasan: Lectures on International Trade, 2<sup>nd</sup> ed. MIT Press 2001.
10. Grossman, G. M. and Rogoff, K., eds. Handbook of international economics. Vol III. Elsevier, 1995.

## Generic Elective – 2

### EMT 405: INDIAN ECONOMY

#### Unit 1: Structure of the Indian Economy

Indian Economy on the Eve of Independence- Basic Characteristics of the Indian Economy as Developing Economy - Major issues of Development in Indian Economy- Growth and Structural Changes in the Indian Economy - Population- Poverty – Measurement of Poverty, Anti Poverty Programmes - Inequality- Natural Resources - Infrastructure- Human Development in India-Prices, Price Policy and Economic Growth - Balanced Regional Development - Unemployment in India.

#### Unit 2: Agricultural Sector

Role Agriculture in Indian Economy - Share of Agriculture - Interrelationship between Agriculture and Industry - Farm Size and Productivity - Institutional and Technological Aspects - New Agricultural Policy - Food Security in India - Rural Credit - Agricultural Marketing - Regional Disparities in Indian Agriculture - Irrigation and other Agricultural Inputs.

#### Unit 3: Industrial Sector

Industrial Structure and Economic Growth - Large and Small Scale Industries - Industrial Labour Problems and Labour Policy - Industrial Sickness Causes and Remedial Measures - Economic Reforms and Industrial Growth - Pattern of Industrialization - Public and Private Industrial Finance in India - Unorganized Sector and Informalisation of the Indian Economy.

#### Unit 4: Tertiary and Foreign Sectors

Service Sector - Role, Growth and Structure of Service Sector in India – Growth, Composition and Direction of India's Foreign Trade – Trade Policy and its Reforms in India – India's Balance of Payments - WTO and Indian Economy.

#### Unit 5: Planning and Development

Objectives and Strategy of Planning - Public Sector and Indian Planning- Re-Organization of Planning Commission ( NITI Aayog) - Privatization and Globalization and its impact on India - Government Subsidies in India - Problems of Capital Formation - Foreign Capital, Foreign aid and Economic Development in India.

#### TEXT AND REFERENCE BOOKS:

7. Ghosh. Alak, Indian Economy – Its Nature and Problems, A New Look Indian Economics, Calcutta, The World Press Private Limited, 1989.
8. Jalan.B, The Indian Economy Problems and Prospects, Viking Publications, New Delhi, 2006.
9. Ruddar Datt and Sundaram. K.P.M, S.Chand and Company, New Delhi, 2008.
10. S.K.Misra and V.K. Puri, Indian Economy, Himalaya Publishing House, New Delhi, 2006.
11. Sen R.K and B.Chatterjee, Indian Economy-Agenda for 21<sup>st</sup> Century, Deep and Deep Publications, New Delhi, 2001.
12. Uma Kapila, Indian Economy Since Independence, Agricola Publications Academy, New Delhi, 1998.

## **Generic Elective - 3**

### **EMT 406: ENVIRONMENTAL ECONOMICS**

#### **Unit 1: Nature and Scope of Environmental Economics**

Nature and Scope of Environmental Economics – Economic Growth and Environmental degradation – Environmental Kuznets Curve - Limits to Economic Growth - Sustainable Development – Environmental Quality and Economic Development.

#### **Unit 2: Environmental Degradation and Resource Depletion**

Natural Resources – Renewable and Non-renewable Resources – Approaches to the use of Natural Resources – Theories of Natural Resources - Depletion of Natural Resources – Tragedy of Commons – Causes of Environmental Degradation.

#### **Unit 3: Sources and Effects of Pollution**

Sources and Types of Pollution – Soil, Air, Water Pollution - Industrialization and Environmental Pollution – Urban Solid-waste and other sources of Pollution – Aqua Culture, Coastal and Marine Pollution - Economic Effects of Pollution.

#### **Unit 4: Environmental Principles and Policies**

Environmental Regulation and Control of Pollution – Polluter Pays Principle - Hedonic Pricing Principle – Pigovian Analysis of taxes and Subsidies - Pollution Permits – Environmental Institutions - Environmental Policy – Objectives – National Environmental Policy of 2006 - Pollution Control Policies in India.

#### **Unit 5: Environmental Laws and Management Strategies**

Environmental Laws and Regulations – The Air Act, The Water Act, The Environmental Protection Act, The Wildlife Protection Act in India - Environment Management Strategies – Development of Clean Production Technologies - Forest Conservation, Management and Conservation of Common Property Resources and Environmental Education – Social Forestry – Community Participation.

#### **TEXT AND REFERENCE BOOKS:**

1. Bhattacharya, R.N. (Ed), 2001, Environmental Economics; An Indian Perspective, Oxford University press, New Delhi.
2. Sankar,U. (Ed), 2001, Environmental Economics, Oxford University press, New Delhi.
3. Baumol, W.J. and W.E. Oates, 1998, the theory of Environmental policy, (2<sup>nd</sup> Edition), Cambridge University press, Cambridge.
4. Anil Kumar, 1990 Environmental Protection and Industrial Development, Ashish Publishing House, New Delhi;
5. Mussen, A.M. 1999, Principles of Environmental Economics, Rutledge, London
6. Kolstad, C.D., 1999, Environmental Economics, Oxford University press, Baltimore.
7. Sengupta, R.P.2001, Ecology and Economics: An approach to sustainable development, Oxford University press, New Delhi.

**Generic Elective – 4**  
**EMT 407: PROJECT**

## Open Elective-1

### EMT 408 OPTIMIZATION TECHNIQUES IN ECONOMICS

#### Unit 1: Transportation Problem

Nature and Matrix form of TP – Transportation Table – Types of Transportation Problem – Balanced Transportation Problem, Unbalanced Transportation Problem – Methods to solve Transportation Problem - The Initial Basic Feasible solution: North-West Corner Rule and Vogel's Approximation method – Moving towards optimality, the Transportation Algorithm.

**Unit 2: Assignment Problem:** Assignment problem, Transportation problem and Linear Programming – Types of Assignment problem – Properties of Optimal Solution – Solving the Assignment Problem by Hungarian Algorithm – The Auction Algorithm for Assignment Problem – Branch and Bond Techniques for Assignment Problem.

**Unit 3 : Game Theory:** Basic concepts -Two-person Zero Sum Games - The Maximum Minimax Principle – Games without Saddle Points – Mixed Strategies – Graphical solution of  $2 \times n$  and  $m \times 2$  Games – Dominance property – The Modified Dominance Property – Reducing the Game Problem as a Linear Programming Problem.

#### Unit 4 : Inventory Management

Introduction - Inventory control - Techniques of Inventory control with known demand - Economic Lot Size Problems –The fundamental Problem of Economic Order Quantity (EOQ), The Problem of EOQ with Uniform Demand, and The Problem of EOQ with Finite Rate of Replenishment - Problem of EOQ with Shortage.

#### Unit 5: Simulation

Introduction – Elements of a Simulation Model – Event – Types of Simulation – Generation of Random Phenomena – Monte Carlo Technique – Generation of Uniform (0,1) Random Observations – Simulation languages.

#### TEXT AND REFERENCE BOOKS:

1. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research, Sultan Chand and sons, New Delhi.
2. Panneerselvam, R: Operations Research, Eastern Economy Edition, Prentice Hall of India, New Delhi, 2007.
3. Srinivasan, G., Operations Research \_Principles and Applications, Second Edition, Prentice Hall of India, New Delhi, 2012.
4. Richard, Brown and Govindaswamy, N., Schaum's Outlines Series Operations Research, Second Edition, 2012.
5. Gupta, P.M. and D.S.Hira: Operations Research, Sultan Chand and Sons, New Delhi.
6. Harven, Wagner: Operations Research.
7. Starr and Miller: Inventory Control.

## Open Elective-2

### EMT 409: Data Base for Indian Economy

**Unit 1:** Census – Demographic Indicators – Definitions – schedules – Dissemination – Database – Types – Other data sets from Census – Economic census – Education census – Agricultural census – Major Results of Recent Census Data in India.

**Unit 2:** National Income Accounting – Base year – Methods of Estimation – Types of Reporting – Balance of Payments (BOP) and National Income (NI) – State Domestic Product – District Domestic Product - District Census Handbooks.

**Unit 3:** NSSO – Large and Small samples – NSSO Rounds on Consumption Expenditure, Employment and Unemployment Status in India – Major Findings of Recent NSS reports on Poverty, Inequality and Unemployment – Annual Survey of Industries (ASI) – Coverage – Definition of Terms – price and wage statistics Major Findings of Recent reports – Socio-economic statistics – National Family Health Survey (NFHS) – Health and Morbidity Data.

**Unit 4:** RBI – Balance sheet approach – Financial and Banking statistics – Money supply Indicators and Statistics on Money Supply in India – Foreign Exchange Reserves – Exchange rate – Stock Market Statistics – Non-banking Financial Institutions data.

**Unit 5:** Govt. and International data – Ministry of Commerce Data on Exports and Imports – Data in Annual Economic Surveys from the Ministry of Finance - Data from World bank, IMF, ILO, WTO, UNCTAD, UN and other international agencies – Specific data bases such as World Value Surveys – Penn World Tables - Gallop Poll.

#### Books for Reference:

1. Websites and reports of respective ministries and organizations, like Directorate of Census Operations, CSO, NSSO, GOI, SEBI, RBI.
2. Reports of Statistics Departments in State Governments.
3. Reports of UN Organisations.
4. Annual Economic Surveys, Ministry of Finance, Government of India.
5. <http://www.commerce.nic.in/eidb/iecnttopn.asp>

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**Open Elective – 3**  
**EMT 410 ACTUARIAL STATISTICS**

**Unit -1** Theory of Interest rates, Rate of Interest, Nominal rate of interest. Accumulation factors. Force of interest, present values, Stoodley formula for the force of interest, Present value of cash flows, Valuing cash flows - Basic Annuities Certain, Present values and accumulation, Concepts of different annuities, Continuously payable annuities, Varying annuities.

**Unit- 2** Utility Theory, Insurance and Utility Theory, Models for individual claims and their sums, Approximations for the distribution of the sum - Application to Insurance - Survival function, time until death for a person age X, Accurate future Life time, Force of Mortality.

**Unit-3** Life Table and its Relation with Survival Function – Examples - The Deterministic Survivorship group, Recursion formulas, Assumptions for traditional ages, Analytical Laws of Mortality, Select and Ultimate tables.

**Unit – 4** Life Insurance : Insurance payable at the moment of death and at the end of the year of death – Level benefit insurance, Endowment insurance, Deferred insurance and Varying benefit insurance. Life Annuities. Single payment, Continuous Life annuities, Discrete life Annuities - life annuities with monthly payments, Complete annuities – Immediate and Apportionable annuities – due.

**Unit 5:** Multiple life functions, Joint life and Last Survivor status, Insurance and Annuity benefits through Multiple life function, Evolution for Special Mortality laws - Multiple decrement models, Associated single decrement tables, Central of multiple decrement, Central force assumptions for multiple decrements. Uniform distribution assumption for multiple decrements.

**Text books:**

1. Bowes, N.L., Gerber, H.U., Hickman ,J.C, Jones, D.A., and nesbitt, C., J .(1986). Actuarial Mathematics. Society of Actuaries, Lthaca, Illins, U/S.A. 2<sup>nd</sup> ed .(1997) C.H.1,2,3,4,5,9&10.
2. Mc Cutchheon, J.J. and Scott, W.F., An introduction to Mathematics of finance.

**References:**

1. Spurgeoin,E.T .(1972). Life Contingencies. Cambridge University Press.
2. Nall, A (1977), Life Contingencies. Heinemann.

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