



SRI VENKATESHWARA UNIVERSITY

TIRUPATI

Model Syllabus for 4-Year UG Honours in B.Sc. (Food Science and Technology) as Major in consonance with Curriculum framework w.e.f. AY 2025-26

Prepared by Vikrama Simhapuri University, Nellore

COURSE STRUCTURE

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
I	I	1	Introduction to Food Science and Technology	3	3
			Introduction to Food Science and Technology-Practical	2	1
		2	Human Nutrition	3	3
			Human Nutrition-Practical	2	1
	II	3	Food Microbiology	3	3
			Food Microbiology-Practical	2	1
		4	Basic principles of Food Engineering	3	3
			Basic principles of Food Engineering-Practical	2	1
II	III	5	Technology of Fats and Oils	3	3
			Technology of Fats and Oils-Practical	2	1
		6	Dairy Technology	3	3
			Dairy Technology-Practical	2	1
		7	Confectionery Technology	3	3
			Confectionery Technology-Practical	2	1
	IV	8	Baking Science and Technology	3	3
			Baking Science and Technology-Practical	2	1
		9	Technology of Fruits and Vegetables	3	3
			Technology of Fruits and Vegetables-Practical	2	1
		10	Technology of Cereals, Pulses and oil seeds	3	3
			Technology of Cereals, Pulses and oil seeds-Practical	2	1
III	V	11	Food Safety and Quality Control	3	3
			Food Safety and Quality Control-Practical	2	1

		12 A	Technology of meat, poultry and fish products	3	3
			Technology of meat, poultry and fish products-Practical	2	1
		OR			
		12 B	Post-harvest technology of horticulture crops and herbs	3	3
			Post-harvest technology of horticulture crops and herbs-Practical	2	1
		13 A	Unit operations in food industry	3	3
			Unit operations in food industry-Practical	2	1
		OR			
		13 B	Fermentation Technology	3	3
			Fermentation Technology-Practical	2	1
	VI	14 A	Food Processing and Preservation Technology	3	3
			Food Processing and Preservation Technology-Practical	2	1
		OR			
		14 B	Food Fortification	3	3
			Food Fortification-Practical	2	1
		15 A	Processing Technology of Beverages	3	3
			Processing Technology of Beverages-Practical	2	1
		OR			
		15 B	Food Packaging Technology	3	3
			Food Packaging Technology-Practical	2	1
IV	VII	16	Enzymes in Food Processing Industry	3	3
			Enzymes in Food Processing Industry-Practical	2	1
		17	Nutraceuticals and Functional foods	3	3
			Nutraceuticals and Functional foods-Practical	2	1
		18	Fundamentals of Food Chemistry	3	3
			Fundamentals of Food Chemistry-Practical	2	1
		19 A	Food Product development and entrepreneurship	3	3
			Food Product development and entrepreneurship-Practical	2	1
		OR			

		19 B	Food waste management and by- product utilization	3	3
			Food waste management and by- product utilization-Practical	2	1
		20 A	Research Methodology and Scientific writing of papers	3	3
			Research Methodology and Scientific writing of papers-Practical	2	1
		OR			
		20 B	Computational biology and ICT in Food industry	3	3
			Computational biology and ICT in Food industry-Practical	2	1
	VIII	21	Food Biotechnology and nano- technology	3	3
			Food Biotechnology and nano- technology-Practical	2	1
		22	Industrial Microbiology	3	3
			Industrial Microbiology-Practical	2	1
		23	Instrumentation in Food Analysis	3	3
			Instrumentation in Food Analysis-Practical	2	1
		24 A	Food Toxicology	3	3
			Food Toxicology-Practical	2	1
		OR			
		24 B	Basics in Immunology, Food Allergy and Food borne diseases	3	3
			Basics in Immunology, Food Allergy and Food borne diseases-Practical	2	1
		25 A	Snack Food Extrusion Technology	3	3
			Snack Food Extrusion Technology-Practical	2	1
		OR			
		25 B	Technology of Spices, condiments and plantation crops	3	3
			Technology of Spices, condiments and plantation crops-Practical	2	1

Note: In the III Year (during the V and VI Semesters), students are required to select a pair of electives from one of the Three specified domains. For example: if set 'A' is chosen, courses 12 to 15 to be chosen as 12 A, 13 A, 14 A and 15 A. To ensure in-depth understanding and skill development in the chosen domain, students must continue with the same domain electives in both the V and VI Semesters.

SEMESTER - II

COURSE 4: BASIC PRINCIPLES OF FOOD ENGINEERING

Theory

Credits: 3

3 hrs/week

Learning Objectives

To enable students to develop understanding on food process engineering concepts.

Learning Outcomes

Upon successful completion of the course, a student will be able to:

LO1: To understand the engineering properties of food materials and units & dimensions.

LO2: To study about fluid flow dynamics

LO3: To study about concepts of heat transfer

LO4: To understand concept of steady and unsteady state of heat transfer methods and mass transfer

LO5: To understand about food plant design and its economic aspects

UNIT I

Engineering properties of food materials: physical, thermal, aerodynamic, mechanical, optical and electromagnetic properties;

Units, Dimensions and Conversions: Unit Operations, design of food process equipment's, elements of measuring instruments- machine elements and electrical elements.

Basics of Vapor Compression Cycle: Properties of steam and Moist air- Boilers operation, Pressure vessels. Evaporators-Types of Evaporators Boiler house and workshop.

UNIT II

Fluid Mechanics: Flow of Fluids – Concept of viscosity – Rheology, Newtonian and Non-Newtonian fluids; Viscometry- types- determination of rheological Properties of fluids using rotational viscometry; Transportation of Fluids- Continuity principle and Bernoulli equation- Reynolds number; Fluid Flow measuring instruments: Orifice meter, Venturimeter- Rotometers.

UNIT III

Concept and types of heat transfer-conduction, convection (forced and free types), radiation; Significance of Kirchhoff's law, Stephan-Boltzman-Planck's distribution law, Wein's displacements law during heat transfer aspects

UNIT IV

Steady state heat transfer methods and principle; Unsteady state heat transfer methods and principles and significance of Fourier number; Biot number; Heisler and Gurney and Lurie

charts; Heat and Mass transfer in dehydration – Stages of drying-principle and concept of drying

UNIT V

Food Plant designs- development and general design considerations; Factors to be considered for location and layout of food plants.

Batch vs Continuous operations of food plants

Economic feasibility during designing of plant, equipment cost and product cost estimations; batch vs continuous operations.

Regulatory requirements of food industries.

References

1. Berk, Z. (2018). Food process engineering and technology. Academic press.
2. Das, H. 2005. Food Processing Operations Analysis. Asian Books.
3. Rao, G.C. 2006. Essentials of Food Process Engineering. BS Publications.
4. Rao, M.A, S.S.H. Rizvi and A.K. Datta. 2005. Engineering Properties of Food, 3rd edn. Taylor and Francis

SEMESTER - II

COURSE 4: BASIC PRINCIPLES OF FOOD ENGINEERING

Practical

Credits: 1

2 hrs/week

1. Food plant designs and its lay out
2. Problems related to units and dimensions
3. Problems related to unsteady state heat transfer methods
4. Problems related to Kirchhoff's law
5. Problems related to Stephan-Boltzman-Plank's distribution law
6. Rheological properties of food materials

**4- Year UG Honours, Major
Syllabus
(2025-26)
Semester-II**

Model Question Paper

Time : 3hrs

Marks:75

Part-A

Answer any Five Questions. Each Question carries 3 Marks.

5x3=15

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Answer the following questions. Each question carries 12 Marks

5x12=60

11. a) Unit-I
(Or)
b) Unit-I

12. a) Unit-II
(Or)
b) Unit-II

13. a) Unit-III
(Or)
b) Unit-III

14. a) Unit-IV
(Or)
b) Unit-IV

15. a) Unit-V
(Or)
b) Unit-V