

**Lesson plan of
2025-2026**

**(4th SEMESTER FOOD
TECHNOLOGY)**

DISCIPLINE: FT	SEMESTER: 4th	NAME OF THE TEACHING FACULTY: MS. SRIYA SUMAN PATRA
SUBJECT: Food Engg. II	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 3	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	1.0 Size reduction & separation 1.1 Objects of size reduction 1.2 Screening, Air filter, Air separation, membrane separation 1.3 Study sedimentation equipment (froth flotation)
2ND	1ST 2ND 3RD 4TH	1.4 Study of classifiers, separators. 1.5 Study the equipment used for grading & sizing in food industry. 1.6 State and Explain Kick's law and Rittinger's law 1.7 Explain grinding (wet and dry)
3RD	1ST 2ND 3RD 4TH	2.0 Filtration & Mixing 2.1 Theory of filtration 2.2 Types of filtration 2.3 Different types of Filters used in industry
4TH	1ST 2ND 3RD 4TH	2.4 Object of mixing, Different types of mixers used in food industry (centrifuge, batch and continuous)
5TH	1ST 2ND 3RD 4TH	3.0 Extraction 3.1 Principles of extraction 3.2 Types of Extraction (solid-liquid extraction, liquid extraction)
6TH	1ST 2ND 3RD 4TH	Study the types of equipment for extraction
7TH	1ST 2ND 3RD 4TH	4.0 Distillation & Crystallization 4.1 Principles of Distillation, types of distillation (flash, steam and differential)
8TH	1ST 2ND 3RD 4TH	4.2 Principles of Crystallization, types of Crystallization (batch, continuous)

9TH	1ST 2ND 3RD 4TH	4.2 Steady state and unsteady state conduction. 4.3 Fourier's law of conduction. 4.4 Derive an equation of heat flow in a composite wall and a cylinder. 4.5 Optimum thickness of insulation. 4.6 Solve problems on conduction.
10TH	1ST 2ND 3RD 4TH	5.0 Drying 5.1 Study the engineering aspects of Drying(Roller drier, spray drier
11TH	1ST 2ND 3RD 4TH	Fluidized bed drier, freeze drier, solar dryer 6.0 Evaporator 6.1 Different types of evaporators used in food industries
12TH	1ST 2ND 3RD 4TH	7.0 Canning & Freezing 7.1 Principles of canning, study of canning machine & other accessories used in canning industry
13TH	1ST 2ND 3RD 4TH	7.2. Principles of freezing, study of different types of freezer plate freezer
14TH	1ST 2ND 3RD 4TH	, blast freezer, cryogenic freezer, vacuum freezer, refrigerator vans & wagons.
15TH	1ST 2ND 3RD 4TH	7.3 Study of different equipments used for processing of food.

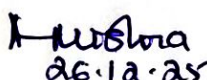
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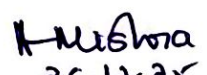
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(4th SEMESTER FOOD TECHNOLOGY)

DISCIPLINE:FT	SEMESTER:4th	NAME OF THE TEACHING FACULTY: MS. Anima Mishra
SUBJECT:FOOD MICROBIOLOGY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:3	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO.OFWEEKS: 15
WEEK	CLASSDAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	INTRODUCTION 1.1 History of microbiology, micro-organisms and men
2ND	1ST 2ND 3RD 4TH	1.2 Classification of micro-organisms : Bacteria, Yeast, Fungi, Algae, Protozoa, Viruses
3RD	1ST 2ND 3RD 4TH	CULTURE METHODS 2.1 Methods of isolation of pure culture,
4TH	1ST 2ND 3RD 4TH	Media preparation, Culture maintenance media
5TH	1ST 2ND 3RD 4TH	2.2 Techniques of culturing, asepsis
6TH	1ST 2ND 3RD 4TH	MICROSCOPY 3.1 Microscope, Different types of microscopes methods of microscopic examination
7TH	1ST 2ND 3RD 4TH	3.2 Staining techniques
8TH	1ST 2ND 3RD 4TH	MORPHOLOGY 4.1 Morphological and cultural characteristics of bacteria and fungi

9TH	1ST 2ND 3RD 4TH	4.2 Vegetative cells, spores, motility
10TH	1ST 2ND 3RD 4TH	PHYSIOLOGY 5.1 Physiology of micro-organisms
11TH	1ST 2ND 3RD 4TH	5.2 Autotrophs & Heterotrophs, chemosynthetic, saprophytes & parasites, Aerobes & Anaerobes,
12TH	1ST 2ND 3RD 4TH	Microaerophilic , psychrophilic, mesophiles and thermophiles.
13TH	1ST 2ND 3RD 4TH	GROWTH & INHIBITION 6.1 Factors affecting growth and death, Cell division, Budding, Sporulation, Fragmentation
14TH	1ST 2ND 3RD 4TH	6.2 Growth optima, Phases of growth
15TH	1ST 2ND 3RD 4TH	6.3 Control of Microbial spoilage by various food preservation methods (Low temperature, high temperature, irradiation, dehydration, chemicals) in fruit & vegetables.


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(4th SEMESTER FOOD TECHNOLOGY)

DISCIPLINE:FT	SEMESTER:4th	NAME OF THE TEACHING FACULTY: MS. ANIMA MISHRA
SUBJECT:FOOD CHEMISTRY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:3	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO.OFWEEKS:15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	1.0 Carbohydrate 1.1 Introduction 1.2 Structure 1.3 Classification and general properties of sugar(physical and chemical)
2ND	1ST 2ND 3RD 4TH	1.4 Physiological functions of carbohydrates 2.0 Proteins 2.1 Introduction
3RD	1ST 2ND 3RD 4TH	2.2 Amino Acid sequence in proteins 2.3 Physical and Chemical Properties of amino acids and proteins 2.4 Food protein and their characteristics
4TH	1ST 2ND 3RD 4TH	3.0 Lipids 3.1 Introduction 3.2 Classification of Lipids
5TH	1ST 2ND 3RD 4TH	3.3 Acid number, iodine value, acetyl value, Reichert-Missal number 3.4 Hydrolytic and oxidative rancidity, preservation of rancidity, reversion
6TH	1ST 2ND 3RD 4TH	4.0 Vitamins 4.1 Occurrence, Chemistry, Classification 4.2 Deficiency diseases and high intakes
7TH	1ST 2ND 3RD 4TH	5.0 Enzymes 5.1 Classification and nomenclature, 5.2 mechanism of enzyme action 5.3 Effect of temperature, PH, enzyme concentration and substrate concentration on the rate of enzyme reaction

8TH	1ST 2ND 3RD 4TH	5.4 Specificity of enzyme, enzyme inhibition, kinetics of enzyme action, activation of enzymes 5.5 Functions of enzymes involved in digestion.
9TH	1ST 2ND 3RD 4TH	6.0 Metabolism of Carbohydrates 6.1 Embolden Meyer Hoff pathway 6.2 Kerb's Cycle 6.3 Glycogenesis, Glycogenosis, Gluconeogenesis
10TH	1ST 2ND 3RD 4TH	7.0 Metabolism of lipids 7.1 Digestion and absorption of lipids
11TH	1ST 2ND 3RD 4TH	8.0 Metabolism of proteins 8.1 Nitrogen pool, nitrogen balance
12TH	1ST 2ND 3RD 4TH	8.2 Evaluate quality of proteins 8.3 Metabolism of proteins and amino acids.
13TH	1ST 2ND 3RD 4TH	9.0 Minerals 9.1 Macronutrients 9.2 Micronutrients
14TH	1ST 2ND 3RD 4TH	
15TH	1ST 2ND 3RD 4TH	

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(4th SEMESTER FOOD TECHNOLOGY)

DISCIPLINE: FT	SEMESTER: 4 th	NAME OF THE TEACHING FACULTY: MS. ANIMA MISHRA
SUBJECT: FOOD SAFETY, HYGIENE, SANITATION	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 3	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	Chapter-1 Introduction 1.1 Importance of Food Hygiene. 1.2 Importance of Food Sanitation. 1.3 Importance of food safety.
2ND	1ST 2ND 3RD 4TH	
3RD	1ST 2ND 3RD 4TH	Chapter-2 General principles of food hygiene 2.1 Aseptic processing packaging and storage 2.2 Evaluate personal hygiene
4TH	1ST 2ND 3RD 4TH	
5TH	1ST 2ND 3RD 4TH	2.3 Health check-ups, cleanliness measures and their implementation. 2.4 Food handling habits
6TH	1ST 2ND 3RD 4TH	
7TH	1ST 2ND 3RD 4TH	Chapter-3 Sanitation 3.1 Sanitation and terminology related to sanitation viz. sanitary processes, sanitary food etc. 3.2 Sanitary aspect of water supply, source and quality of water in use for industry. 3.3 Purification and disinfections of water.
8TH	1ST 2ND 3RD 4TH	
9TH	1ST 2ND 3RD 4TH	

10TH	1ST 2ND 3RD 4TH	3.4 Preventing contamination of portable water supply.
11TH	1ST 2ND 3RD 4TH	Chapter-4 Plant sanitation 4.1 Importance of cleaning, physical, chemical factors in cleaning, washing sanitation. 4.2 Sanitizers commonly used and their properties.
12TH	1ST 2ND 3RD 4TH	
13TH	1ST 2ND 3RD 4TH	4.3 Sanitization of equipment's. 4.4 Steam sanitization for closed system.
14TH	1ST 2ND 3RD 4TH	
15TH	1ST 2ND 3RD 4TH	

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(4th SEMESTER FOOD TECHNOLOGY)

DISCIPLINE:FT	SEMESTER:4 th	NAME OF THE TEACHING FACULTY: MS. Sriya Suman Patra
SUBJECT: Fermentation Technology	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:3	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	Introduction to Fermentation: 1.0 Modern methods of cell culture: synchronous and co- cell culture, continuous cell culture in liquid and solid media. 1.1 Pre and probiotics culture.
2ND	1ST 2ND 3RD 4TH	
3RD	1ST 2ND 3RD 4TH	Fermenter design and operation 2.1 Types of fermentation: sub-merged and solid state. Batch and continuous fermentation
4TH	1ST 2ND 3RD 4TH	
5TH	1ST 2ND 3RD 4TH	Principle and use of fermentation 3.1 Production of vitamins, amino acids, organic acids, enzymes (amylase, pectinase, and proteases), antibiotics, alcohols etc. 3.2 Health benefits of fermented foods. 3.3 Nutritional importance of fermented foods. 3.4 Lactic acid bacteria.
6TH	1ST 2ND 3RD 4TH	
7TH	1ST 2ND 3RD 4TH	Impact of fermentation on food quality 4.1 Effect of fermentation on flavour, texture, nutritional and shelf-life in different food groups.
8TH	1ST 2ND 3RD 4TH	
9TH	1ST 2ND 3RD 4TH	Fermented foods 5.1 Processing of fermented foods: Beer, Wine,

10TH	1ST 2ND 3RD 4TH	
11TH	1ST 2ND 3RD 4TH	Vinegar, bread, sauerkraut, meat, fish, cultural dairy products.
12TH	1ST 2ND 3RD 4TH	
13TH	1ST 2ND 3RD 4TH	
14TH	1ST 2ND 3RD 4TH	Waste utilization or management 6.1 Cassava Industry 6.2 Fish Industry 6.3 Fruits & Vegetables processing industry.
15TH	1ST 2ND 3RD 4TH	

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**(4th SEMESTER
FOOD TECHNOLOGY)**

DISCIPLINE:FT	SEMESTER:4th	NAME OF THE TEACHING FACULTY: MS. SRIYA SUMAN PATRA
SUBJECT: Food Engg.II Lab	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:4	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	Study and operation of a mechanically/manually operated sieve-shaker; Particle size measurement by screen analysis of a ground product
2ND	1ST 2ND 3RD 4TH	Study and operation of a cyclone separator
3RD	1ST 2ND 3RD 4TH	Study and operation of a tray dryer; determination of drying rate under constant drying condition and plotting graph of falling rate period
4TH	1ST 2ND 3RD 4TH	Study and operation of different types of canning machines.
5TH	1ST 2ND 3RD 4TH	Study and operation of a refrigerator deep freezer
6TH	1ST 2ND 3RD 4TH	Study and operation of a plate and frame filter press; Determination of rate of filtration under different pressures
7TH	1ST 2ND 3RD 4TH	Study and operation of a centrifuge
8TH	1ST 2ND 3RD 4TH	Study and operation of different types of food processing equipment used in food industry
9TH	1ST 2ND 3RD 4TH	Study and operation of crystallizer Study and operation of a humidifier

10TH	1ST 2ND 3RD 4TH	Determination of humidity by dry and wet bulb thermometer from psychometric chart
11TH	1ST 2ND 3RD 4TH	Physical Examination of milk and sampling, Analysis of milk for water, fat, solids, acidity,
12TH	1ST 2ND 3RD 4TH	specific gravity, freezing point, viscosity and electrical conductivity (a) Methylene blue reductase test (b) Gerber's fat test (c) Solid non-fat test
13TH	1ST 2ND 3RD 4TH	Pasteurization of milk ,Homogenization of milk
14TH	1ST 2ND 3RD 4TH	Production of following milk products (a) Condensed milk (b) Evaporated milk (c) Dried milk (d) Cream
15TH	1ST 2ND 3RD 4TH	(e) Butter (f) Ghee (g) Ice-cream (h) Flavored and chocolate milk Preparation of indigenous milk products

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(4th SEMESTER FOOD TECHNOLOGY)

DISCIPLINE:FT	SEMESTER:4th	NAME OF THE TEACHING FACULTY: MS. ANIMA MISHRA
SUBJECT: Food Chemistry Lab	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:4	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	Determination of moisture content... 9.. 10.. 11. 12.
2ND	1ST 2ND 3RD 4TH	Detection of reducing sugar by Fehling and Benedict test
3RD	1ST 2ND 3RD 4TH	Quantitative determination of reducing sugar by Lane and Eynon method
4TH	1ST 2ND 3RD 4TH	
5TH	1ST 2ND 3RD 4TH	Determination of fiber content of different food material and compare them
6TH	1ST 2ND 3RD 4TH	Detection of amino acid, protein and peptides by Ninhydrin test
7TH	1ST 2ND 3RD 4TH	Determination of protein quantity by Kjeldahl method
8TH	1ST 2ND 3RD 4TH	Determination of acid test
9TH	1ST 2ND 3RD 4TH	Extraction of fat by Soxhlet apparatus

10TH	1ST 2ND 3RD 4TH	Determination of Ash content
11TH	1ST 2ND 3RD 4TH	Detection of presence of starch by Iodine test
12TH	1ST 2ND 3RD 4TH	
13TH	1ST 2ND 3RD 4TH	
14TH	1ST 2ND 3RD 4TH	Determination of water activity of different food materials
15TH	1ST 2ND 3RD 4TH	
		To distinguish between mono-saccharides and di-saccharides of Barfoed test.

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DISCIPLINE:FT	SEMESTER:4th	NAME OF THE TEACHING FACULTY: MS. ANIMA MISHRA
SUBJECT: Food Microbiology Lab	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:4	SEMESTER FROM DATE: 22.12.2025 TO 18.04.2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST 2ND 3RD 4TH	Study of Microscope and their parts
2ND	1ST 2ND 3RD 4TH	
3RD	1ST 2ND 3RD 4TH	Straining of Bacteria and observe size , motility, met achromatic granular and spores
4TH	1ST 2ND 3RD 4TH	
5TH	1ST 2ND 3RD 4TH	Morphology of Bacteria, molds, yeasts
6TH	1ST 2ND 3RD 4TH	Prepare nutrition growth and media with agar, gelatin and special media for culture of microbes.
7TH	1ST 2ND 3RD 4TH	
8TH	1ST 2ND 3RD 4TH	Sterilization of glassware and media

9TH	1ST 2ND 3RD 4TH	Straining of Bacteria and observe size , Isolate pure culture from water, milk,, Fruit juice, fish, meat etc.
10TH	1ST 2ND 3RD 4TH	Determine bacterial species
11TH	1ST 2ND 3RD 4TH	Determine thermal death time, Methylene blue reduction test
12TH	1ST 2ND 3RD 4TH	
13TH	1ST 2ND 3RD 4TH	Bacteriological examination of water and milk.
14TH	1ST 2ND 3RD 4TH	Quality assessment of processed food. Isolate the fecal coliform from sewage water and determine the MPN (most probable No.) of sample
15TH	1ST 2ND 3RD 4TH	

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