

LESSON PLAN

Discipline: B.Tech in Biotechnology

Semester: 5th

Subject: BTPE3003 – Food Process Engineering

No. of Days/Week: 3

Semester Duration: July – December

No. of Weeks: 15

Name of the Teaching Faculty: Dr. Subhasmita Panda

Week	Class Day	Theory Topics
1st	1st	Introduction to Food Processing – Objectives and Importance
	2nd	Classification of Food and its Constituents
	3rd	Physical, Chemical, and Biochemical Changes During food Processing
2nd	1st	Food Spoilage and Microbial Contamination
	2nd	Preliminary Processing – Cleaning, Sorting, Grading
	3rd	Overview of Preservation Techniques
3rd	1st	Thermal preservation – Pasteurization and Sterilization
	2nd	Thermal preservation – Pasteurization and Sterilization
	3rd	Blanching, Refrigeration and Freezing
4th	1st	Cryogenic Freezing – Concepts and Applications
	2nd	Food Dehydration – Overview
	3rd	Food Concentration, Freeze-Drying and Spray Drying Techniques
5th	1st	Non-Thermal Methods – High Pressure Processing
	2nd	Pulsed Electric Field
	3rd	Irradiation
6th	1st	Hurdle Technology
	2nd	Minimal Processing
	3rd	Principles of Food Fermentation
7th	1st	Lactic Acid, Alcoholic, and Acetic Acid Fermentations
	2nd	Fermented Food Products – Yogurt, Cheese, Vinegar
	3rd	Fermented Vegetables and Functional Foods
8th	1st	Probiotics and Prebiotics in Food
	2nd	Role of Enzymes in Food Processing
	3rd	Role of Enzymes in Food Processing
9th	1st	Industrial Fermentation Equipments
	2nd	Bioreactors
	3rd	Introduction to Food Packaging
10th	1st	Packaging Materials – Plastic, Paper, Metal, Biodegradable
	2nd	Vacuum, MAP
	3rd	Active Packaging Techniques
12th	1st	Storage and Shelf Life – Role of Moisture, Oxygen, Light
	2nd	Temperature Effects on Food Stability

	3rd	Transportation and Distribution in Food Industry
13th	1st	Smart Packaging and IoT in Food Monitoring
	2nd	Quality Assurance and Quality Control
	3rd	Food Safety Management Systems – HACCP and ISO 22000
14th	1st	Food Laws and Regulations – FSSAI, Codex, AGMARK, BIS
	2nd	Food Laws and Regulations – FSSAI, Codex, AGMARK, BIS
	3rd	Food Additives and Contaminants – Detection & Limits
15th	1st	Environmental and Ethical Issues in Food Tech
	2nd	Societal Concerns and Case Studies
	3rd	Case Study Discussion