



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Institute of Technology  
Semester-3

**Subject:** Food Processing Technology - BETFT13303

**Type of course:** Major

**Prerequisite:** Nil

**Rationale:** The Food Processing Technology course introduces students to the fundamental principles, techniques, and applications involved in food processing and engineering. The course aims to develop an understanding of mass and energy balance, unit operations, food deterioration, preservation methods, quality evaluation, and regulatory standards in the food industry. It provides insight into engineering applications relevant to food technology and equips students with the necessary knowledge to enhance food quality, safety, and shelf life.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
4	0	2	5	60	30	10	20	30	150

*Legends: CI-Class Room Instructions; T- Tutorial; P - Practical; C - Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V- Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

**Course Content:**

Unit No.	Course content	Hrs.	% Weightage
1	<b>Fundamentals of Food Processing &amp; Engineering:</b> - Engineering units and Dimensions: Base units, Derived units and Supplementary units. Indian Food Industry: Present status, opportunities and challenges, sectors of Indian food industry, government initiatives for growth of food industry. Fundamentals of Mass and Energy balance:	15	25%



	Application of mass and energy balances in food engineering operations		
2	<b>Unit Operations in Food Processing:</b> - Equipment and Machinery deployed in food processing Industry, Cleaning, Grading, Peeling, Cutting Balancing, Pulping, Size reduction, Separation and Drying	15	25%
3	<b>Food Deterioration, Preservation &amp; Processing:-</b> Basic concept, factors affecting the food deterioration and different techniques of preservation and processing.	15	25%
4	<b>Food Standards, Quality Evaluation &amp; Engineering Applications:</b> - Regulatory aspects of food marketing, need for evaluation, methods of food evaluation. Steam Tables, Psychometric Chart: Basic methods and applications.	15	25%

**Continuous Assessment:**

Sr. No.	Active Learn	Marks
1.	<b>Case Study Analysis (Bhavnagar Food Industry):</b> Students will analyze real-world case studies on the Bhavnagar food industry, identify challenges, explore opportunities, and review government initiatives supporting the sector. They will complete and submit an inquiry form based on their analysis and prepare a detailed presentation (PPT). The final submission must be uploaded on the GMIU Portal.	10
2.	<b>Reverse Engineering a Processed Food:</b> Faculty will provide students with a packaged food product and instruct them to analyze its processing steps, ingredient list, and preservation techniques. They must compile their findings into a detailed document(PDF) and submit it on the GMIU Portal.	10
3.	<b>Poster Presentation on Emerging Technologies:</b> Students will do research and create posters on emerging food processing technologies such as nanotechnology, 3D food printing, or intelligent packaging. And submit poster on GMIU Portal.	10
Total		30

**Suggested Specification table with Marks (Theory): 60**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	30%	40%	20%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The





actual distribution of marks in the question paper may vary slightly from the above table.

### List of Practical

Sr. No	Title	Hours
1	Study of engineering units and dimensions in food processing	3
2	Determination of mass and energy balance in a food processing operation.	3
3	Demonstration of cleaning and grading equipment used in the food industry.	3
4	Peeling, cutting, and size reduction of fruits and vegetables.	3
5	Drying and dehydration techniques for food preservation.	3
6	Demonstration of food separation techniques (filtration, centrifugation, sedimentation).	3
7	Study of thermal processing methods (pasteurization, sterilization).	3
8	Quality evaluation of food products using sensory analysis.	3
9	Understanding and using steam tables and psychometric charts.	3
10	Study of food packaging materials and their impact on shelf life.	3
Total		30

### Course Outcome:

After learning the course, the students should be able to:	
CO1	Explain the fundamentals of food processing and engineering.
CO2	Describe unit operations and equipment used in food processing.
CO3	Analyze food deterioration factors and preservation techniques.
CC4	Apply food quality standards and engineering principles.

### Instructional Method:

The course delivery method will depend upon the requirement of content and the need of students. The teacher in addition to the conventional teaching method by blackboard, may also use any of the



tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content, 10% of topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done based on the Active Learning Assignment

### **Reference Books:**

- [1] Fundamentals of Food Process Engineering by R. T. Toledo
- [2] Food Engineering Operations by Brennan and Cowell
- [3] Food Process Engineering by Heldman and Singh
- [4] Intro to Food Process Engineering by P. G. Smith
- [5] Transport Process & Unit Operations by Geankoplis

