



FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: Bachelor of Technology (Food Processing Technology)

Semester: VII

Course Code: 202070706

Course Title: Food Packaging Technology

Course Group: Professional Elective Course - III

Course Objectives: Processed food products are not only preserved but also delivered through distribution chain. Food packaging plays vital role in maintaining product safety and wholesomeness. The course enables the learner to understand available food packaging materials and to make best suitable choice of the materials and technology suiting to product nature, consumer behavior and revenue generation.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
3	0	2	4	50/18	50/17	25/9	25/9	150/53

* J: Jury; V: Viva; P: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction: Difference between packing and packaging, Levels of food packaging, Classification of packaging materials, Functions of Food Packaging, Ideal characteristics of food packaging materials, Natural Food packaging, Food Packaging Hazards, Factors to be considered for Food Package design, Relationship between bulk density, true density and porosity and their implications on food packaging	08
2	Properties, Limitations and Applications: Glass, Metal Containers (Aluminum and tin plate containers), Paper and its types, Corrugated Fiber board boxes	08
3	Properties, Limitations and Applications: Plastic packaging materials like Polyethylene, PP, PVC, PET, EVOH, PVdC, Polyamide, Cellulose Acetate, Regenerated Cellulose, , Epoxy phenolic resins	08
4	Properties, limitations and Applications: Plastic laminates, Flexible/retortable pouches, Blister packaging, Aseptic Packaging, Logistical Packaging	07



5	Advances in Food Packaging: Active and Intelligent Packaging, RFID indicators Edible films/coating,	05
6	Food Packaging Machinery: Types of filling (Gravitational and Volumetric System), Low Vacuum filling system, Piston Type filling system, Form Fill and Sealing System	05
7	Food Product Labeling: FSSAI general regulations for food labeling, Product Claims, Nutritional Labeling, Role of Codex Alimentarius commission	04
	Total	45

List of Practicals / Tutorials:

1	Designing of food product label
2	Determination of GSM for packaging material
3	Determination of packaging material thickness by dial gage micrometer
4	Study of corrugated boxes
5	Thermal shock resistance test for glass bottles
6	Determination of Cobb value of paper and paperboard
7	Determination of tensile strength of packaging material
8	Determination of drop resistance and Ink adhesion test for milk pouches
9	Study of Controlled & modified atmosphere packaging machinery
10	Determination of paper alkalinity
11	Demonstration of Vacuum packaging machinery & shrink wrapping machinery

Reference Books:

1	Food Packaging by Robertson G.L. Publisher CRC Press
2	Handbook of Food Packaging Technology by NIIR, New Delhi
3	Handbook of Food Packaging 2nd edition by Paine F.Y. and Paine H.Y. Publisher Springer Science
4	Food Packaging and Preservation by M. Mathlouthi. Publisher Blackie Academic & professional
5	Food Packaging by Stanley S. Publisher Avi Publishing Co Inc.

Supplementary learning Material:

1	https://nptel.ac.in/courses/126105015
2	https://nptel.ac.in/courses/126103017
3	Recent advances in intelligent food packaging materials: Principles, preparation and applications. Food Chemistry Vol. 375. https://doi.org/10.1016/j.foodchem.2021.131738
4	Novel Bio-Based Materials and Applications in Antimicrobial Food Packaging: Recent Advances and Future Trends. Int. J. Mol. Sci. 2021, 22, 9663. https://doi.org/10.3390/ijms22189663
5	Advances in using Nanotechnology structuring approaches for improving food packaging by Lei Mei and Qin Wang. Annual Review of Food Science & Technology Vol. 11 https://doi.org/10.1146/annurev-food-032519-051804

Pedagogy:

- Direct classroom teaching



- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Industrial/ Field visits
- Course Projects

Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	U	A	N	E	C	
20%	35%	10%	20%	15%	0	

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 above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Comprehend the basic concepts, levels, functions and design factors for food packaging,	20
CO-2	Know characteristics, suitability and applications of paper, Glass and metal based packaging materials	25
CO-3	Know characteristics and applications of plastic based materials and related packaging and filling systems	30
CO-4	Awareness about recent trends in food packaging technologies and food labeling regulations	25

Curriculum Revision:

Version:	2
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	
Next Review on (Month-Year):	June-2025