



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3171404

Semester – VII

Subject Name: Food Packaging Technology

Type of course: Professional Elective Course

Prerequisite: Nil.

Rationale: Processed food products have to be kept and delivered through distribution chain and must be safe. During transit and storage at different levels, food may experience different hazards. Food packaging enables to keep it safe and have extended shelf life. Different packaging materials and its related technology respective to individual food product nature, offers wide options.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ES (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr.No.	Topics	Total Hrs.
1.	Introduction: Functions of Food Packaging, Ideal characteristics of food packaging materials, Natural Food packaging, Food Packaging Hazards, factors to be considered for food packaging designing, Difference between packing and packaging, Levels of food packaging, Classification of packaging materials, Food Labeling	09
2.	Manufacturing, Properties, Limitations and Applications of: Paper and its types, Corrugated Fiber board boxes, Glass, Metal Containers (Aluminum and tin plate containers),	08
3.	Properties, Limitations and Applications of: Plastic packaging materials like Polyethylene, PP, PVC, PET, Polyamide, Cellulose Acetate, Regenerated Cellulose, EVOH, PVdC, Epoxy phenolic resins	08
4.	Properties, limitations and Applications of: Plastic laminates, Flexible/retortable pouches, Blister packaging, Aseptic Packaging, Logistical Packaging	06
5.	Recent trends in Food Packaging: Edible films/coating, Active and Intelligent Packaging, RFID indicators	06
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

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C
30%	35%	15%	10%	10%	

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)



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Reference Books:

1. Fundamentals of Food Packaging By Payne FA
2. Food Packaging by Robertson G.L. Publisher CRC Press
3. Food Packaging by Stanley S
4. Hand Book of Packaging by Indian Institute of Packaging
5. Food Packaging and Preservation by M Mathlouthi, Blackie Academic & professional
6. Handbook of Food Packaging Technology by NIIR, New Delhi

Course Outcomes:

At the end of this syllabus students will be able to:

CO	CO Statement	% Marks Weightage
1	Understand the basic concepts of food packaging	25%
2	Know characteristics and applications of paper, Glass and metal based packaging materials	25%
3	Know characteristics and applications of plastic based materials and related packaging and filling systems	35%
4	Aware about futuristic food packaging technologies	15%

List of Practical:

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 for milk pouches
9. Ink adhesion test for milk pouches
10. Determination of paper alkalinity
11. Determination of compression strength of CFB Box.

Major Equipments

1. GSM Tester
2. Compression Strength tester
3. Texture Analyser
4. Drop Tester

List of open source software/learning websites

- i) www.iip-in.com
- ii) www.science.gc.ca
- iii) www.pca.org.au/site/education/index.php