FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: Bachelor of Technology (Dairy Technology)

Semester: VII

Course Code:

Course Title: Packaging of Dairy Products

Course Group: Professional Core Course

Course Objectives: This course highlights the critical role of packaging in the production, storage, and distribution of dairy products, ensuring quality and safety. It covers commonly used packaging materials and their functional benefits in the dairy industry. Students will also explore emerging eco-friendly and sustainable packaging technologies.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		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:

SN	Contents	Hours
1	**Introduction** Importance of packaging, history of package development, packaging organizations and agencies, packaging type: primary, secondary and tertiary	3
2	**Packaging materials** Characteristics of basic packaging materials: paper (paper board, corrugated paper, fibre board), glass, metal, plastics, foils and laminates, retort pouches, Package forms	9
3	**Packaging of milk and dairy products** Pasteurized milk, UHT -sterilized milk, aseptic packaging, fat rich products- ghee and butter, coagulated and desiccated indigenous dairy products, concentrated and dried milks including baby foods	9
4	**Modern packaging techniques** Vacuum Packaging, modified atmosphere packaging (MAP), eco friendly packaging, principles and methods of package sterilization, coding and labelling of food packages	8
5	**Aseptic packaging** Scope of AP and pre-requisite conditions for AP, description of equipments	6

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	(including aseptic tank) and machines- micro-processor controlled systems employed for AP, package conditions and quality assurance aspects of AP	
6	**Disposal & microbiological aspects of packaging material** Disposal of waste package materials, packaging Systems, microbial standards, packaging material as sources of contamination	**7**
	Total	**42**

List of Practical:

1	Identification of packaging material
2	Thickness and grammage of paper/paper board
3	Tearing resistance of paper/paper board
4	Bursting strength of paper/paper board
5	Water vapour transmission rate (WVTR) of plastic and laminates
6	Grease resistance of plastic and laminates
7	Water absorptiveness of packaging material
8	Flame hot wire test of packaging material
9	Testing of glass bottle - resistance to thermal shock
10	Puncture resistance of packaging material/percent moisture paperboard

Reference Books:

1	Text book on Packaging of Dairy products, ICAR, New Delhi
2	An introduction to Dairy Technology by Sandeep Tomar, Pragun Publication
3	Milk and Milk processing by Shivashraya Singh, New India Publishing Agency
4	Dairy Science and Technology by Pieter Walstra, Taylor & Francis

Supplementary learning Material:

1	Packaging Market size, growth and industry developments (2023-32) https://www.towardspackaging.com/insights/packaging-market-sizing
2	ecoursesonline.iasri.res.in
3	Food packaging, egyankosh

Pedagogy: Following one or more points can be incorporated as relevant pedagogy methods.

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Seminar/Poster Presentation
- Industrial/ Field visits
- Course Projects

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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**	
10%	15%	20%	25%	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 above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	To understand the current status of packaging and packaging organization working at national and international level	20
CO-2	To classify the various types of packaging material used for milk and milk products	25
CO-3	To interpret the modern packaging techniques e.g. vacuum packaging, modified atmospheric packaging techniques used for milk products	30
CO-4	To assess the packaging with potentially able to reduce the wastage by disposing off and by recycling innovations	25

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025

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