



## FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

**Programme:** Bachelor of Technology (Food Processing Technology)

**Semester:** VII

**Course Code:** 202070704

**Course Title:** Technology of Milk and Milk Product

**Course Group:** Professional Core Course

**Course Objectives:** This course includes the study of milk from farm gate all the way through the distribution, storage, manufacturing and applications of dairy products. Practices that affect milk quality and the technology of milk processing and dairy products manufacture are the main emphasis of this course.

### 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	<b>Market Milk:</b> Review of Dairy Development in India, Milk Composition and Constituents; Factors Affecting Composition of Milk; Physico-chemical Properties of Milk; Flavour Defects in Milk	08
2	<b>Special Milk:</b> Sterilized Milk; Homogenized Milk; Flavoured Milk; Standardized Milk; Reconstituted/Re-hydrated Milk; Recombined Milk; Toned Milk	08
3	<b>Butter, Cream:</b> Classification, Types and Methods of Separation; Butter: Composition and Types; Process of Butter Production, Overrun; Fat Losses in Butter Making	07
4	<b>Ice Cream:</b> Composition; Role of Ingredients, Details of Production; Overrun in Ice cream	07
5	<b>Cheese:</b> Composition; Types of cheese, Details of manufacturing of Cheddar Cheese, Processed cheese manufacturing	07



<b>6</b>	<b>Condensed and Dried Milks:</b> Composition; Types of Condensed Milk; Flow Diagram of Condensed Milk production; Dried milk composition, Malted Milk Food	<b>08</b>
	Total	<b>45</b>

**List of Practicals / Tutorials:**

<b>1</b>	To conduct platform test for checking suitability milk for processing
<b>2</b>	To estimate acidity of given milk sample
<b>3</b>	Determination of fat content in milk by Gerber's method
<b>4</b>	Determination of protein in milk by Formal Titration method (Pyne's method)
<b>5</b>	To estimate the Solid Not Fat content in the given sample of milk by using lactometer
<b>6</b>	To prepare Khoa or Mava from the given milk sample
<b>7</b>	Preparation of Paneer
<b>8</b>	Preparation of Chhana and chhana based product
<b>9</b>	Calculation of overrun in butter
<b>10</b>	Calculations on standardization of milk

**Reference Books:**

<b>1</b>	Outlines of Dairy Technology by Sukumar De. Oxford University Press
<b>2</b>	Indian Dairy Products by Rangappa KS. Asia Publishing House
<b>3</b>	Engineering for Dairy and Food Products by Farrall AW. John Wiley and Sons
<b>4</b>	Cheese and Butter. V. Cheke & A. Sheeprd. Agrobios (India)
<b>5</b>	Technology of Indian Milk Products by R P Aneja, B N Mathur, A Dairy IndiaPublication, Delhi, India
<b>6</b>	Dairy Plant Engineering and Management by Tufail Ahmed, Kitab Mahal

**Supplementary learning Material:**

<b>1</b>	<a href="http://www.nddb.org">http://www.nddb.org</a>
<b>2</b>	<a href="http://www.amul.com/">http://www.amul.com/</a>
<b>3</b>	<a href="http://www.dairyfoods.com">http://www.dairyfoods.com</a>
<b>4</b>	<a href="http://www.fao.org/agriculture/dairy-gateway/milk-production/en/">http://www.fao.org/agriculture/dairy-gateway/milk-production/en/</a>

**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%	20%	18%	20%	22%	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	A broad and coherent body of knowledge of basic physico-chemical and compositional aspects of milk	35
CO-2	Develop proficiency and hands-on skills in manufacturing selected dairy products in a pilot plant setting	40
CO-3	An appreciation of the safety and quality factors that determine the acceptability of the dairy products by consumers	25

**Curriculum Revision:**

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