



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3171403

Semester – VII

Subject Name: Milk and Milk Product Technology

Type of course: Professional Elective Course

Prerequisite: Nil

**Rationale:** 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 and Examination Scheme:

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

Content:

Sr. No.	Content	Total Hrs
1	<b>Market Milk:</b> Review of Dairy Development in India, Milk Composition and Constituents; Factors Affecting Composition of Milk; Physio-chemical Properties of Milk; Flavour Defects in Milk	07
2	<b>Special Milk:</b> Sterilized Milk; Homogenized Milk; Flavoured Milk; Standardized Milk; Reconstituted/Re-hydrated Milk; Recombined Milk; Toned Milk	07
3	<b>Butter:</b> Cream: Classification, Types and Methods of Separation; Butter: Composition and Types; Process of Butter Production, Overrun; Fat Losses in Butter Making	06
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	08
6	<b>Condensed and Dried Milks:</b> Composition; Types of Condensed Milk; Flow Diagram of Condensed Milk production; Dried milk composition, Malted Milk Food	07

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	18	20	22	---

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

Reference Books:

1. Outlines of Dairy Technology by Sukumar De. Oxford University Press
2. Indian Dairy Products by Rangappa KS. Asia Publishing House
3. Engineering for Dairy and Food Products by Farrall AW. John Wiley and Sons



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4. Cheese and Butter. V. Cheke & A. Sheeprd. Agrobios (India)
5. Technology of Indian Milk Products by R P Aneja, B N Mathur, A Dairy India Publication, Delhi, India
6. Dairy Plant Engineering and Management by Tufail Ahmed, Kitab Mahal.

### Course Outcome:

At the end of this module, following capabilities will be develop in the students:

- a. A broad and coherent body of knowledge of basic physico-chemical and compositional aspects of milk
- b. Develop proficiency and hands-on skills in manufacturing selected dairy products in a pilot plant setting
- c. An appreciation of the safety and quality factors that determine the acceptability of the dairy products by consumers

### List of Practicals:

- a. To conduct platform test for checking suitability milk for processing
- b. To estimate acidity of given milk sample
- c. Determination of fat content in milk by Gerber's method
- d. Determination of protein in milk by Formal Titration method (Pyne's method)
- e. To estimate the Solid Not Fat content in the given sample of milk by using lactometer
- f. To prepare Khoa or Mava from the given milk sample
- g. Preparation of Paneer
- h. Preparation of Chhana and chhana based product
- i. Judging and grading of quality of Butter
- j. Calculation of overrun in butter

### Major Equipments:

Centrifugal Cream Separator  
Milko-tester  
Centrifuge  
Steam jacketed kettle  
Water bath

### List of Open Source Software/learning website:

- a. <http://www.nddb.org>
- b. <http://www.amul.com/>
- c. <http://www.dairyfoods.com/>
- d. <http://www.fao.org/agriculture/dairy-gateway/milk-production/en/>