



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Subject Code: BV02009041

Subject Name: Dairy Technology

w. e. f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Core Courses

Prerequisite:	NA
Rationale:	This course focuses on milk processing and dairy technology, offering students comprehensive knowledge of milk's composition, properties, and grading. It provides insights into the processes involved in market milk production, specialized milk varieties, and indigenous and fermented milk products. Additionally, the course introduces advanced techniques like Cleaning-In-Place (CIP) and Sterilization-In-Place (SIP) systems essential for maintaining hygiene in dairy operations. The course equips students with theoretical and practical knowledge required for careers in the dairy industry, emphasizing quality assurance and innovation.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Understand about the products that can be made from milk
02	Understand the processing and storage of dairy products.
03	Know about the quality control measures applied in dairy industries.
04	Having a basic idea about their processing and products which can be made at a small scale

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	0	3	50	0	0	0	50



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction Milk - Definition, sources, and composition of milk, factors effecting composition of milk, physiochemical properties of milk, grading of milk-definition and types of grades, collection and transportation of milk.	9	20
2.	Processing of market milk - Flowchart of milk processing, Reception, Different types of cooling systems. Clarification and filtration process, standardization- Pearson's square method, pasteurization-LTLT, HTST and UHT process continuous pasteurizer, Sterilization and Homogenization, Cream separation- centrifugal cream separator, bactofugation.	10	20
3.	Special milks - Skim milk, evaporated milk, condensed milk, standardized milk, toned milk, double toned milk, flavoured milk, reconstituted milk.	8	20
4.	Indigenous and Fermented milk products - Product description, methods for manufacture of butter, cheese, ice cream, Khoa, Channa, paneer, Shrikhand, ghee. Spray drying system: dried milk- whole milk and skim milk powder. Instantization of milk	9	20
5.	In-Plant cleaning system - Introduction to Cleaning in- place (CIP) system - cleaning procedure, cleaning efficiency, Methods of cleaning in food industry, cleaning solutions – Detergents, Sanitizers. SIP system of dairy plant, Personal hygiene in dairy plant.	9	20
Total		45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
25	20	15	10	15	15

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)



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References/Suggested Learning Resources:

(a) Books:

1. Joshi.V.K. (2015),” Indigenous Fermented Foods of South Asia”, CRC Press.
2. Alan H. Varnam, (2012), “Milk and Milk Products: Technology, chemistry and microbiology”, Springer Science & Business Media Publishers.
3. Robinson, R. K., (2012), “Modern Dairy Technology: Volume 2 Advances in Milk Products”, Springer Science & Business Media Publishers.

(b) Open-source software and website:

1. **National Dairy Development Board (NDDB)** - <https://www.nddb.coop/> Provides insights into milk production, grading, and processing in India, along with industry statistics and trends.
2. **Food and Agriculture Organization (FAO)** - <http://www.fao.org/home/en/> Offers resources on dairy technology, milk hygiene, and global standards for milk and dairy products.
3. **International Dairy Federation (IDF)** - <https://www.fil-idf.org/> Contains international guidelines, research, and innovations in dairy processing and product manufacturing.
4. **FSSAI (Food Safety and Standards Authority of India)** - <https://fssai.gov.in/> Provides regulatory standards for milk, dairy products, and in-plant hygiene practices.
5. **Codex Alimentarius** - <http://www.fao.org/fao-who-codexalimentarius/> International standards and best practices for milk and milk product processing.
6. **ScienceDirect** - <https://www.sciencedirect.com/> Offers access to scientific articles on milk composition, processing technologies, and product development.
7. **Dairy Processing Handbook** - <https://dairyprocessinghandbook.com/> A detailed guide to milk processing, equipment, and hygiene systems used in the dairy industry.

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