



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Subject Code: BV02009061

Subject Name: Dairy Technology Lab

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

Prerequisite:	NA
Rationale:	The "Dairy Technology Lab" course is structured to provide practical insights into the processing and quality evaluation of milk and its derivatives. Through hands-on experiments such as fat and protein determination, preparation of dairy products like khoa, paneer, and flavored milk, and quality assessment of butter, students gain essential skills in dairy processing. These practicals emphasize quality control, product development, and technical methods, preparing students for roles in the dairy industry.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Students will develop the ability to analyze milk quality through standard tests such as acidity, fat content, protein estimation, and SNF determination.
02	Students will acquire hands-on skills in processing dairy products like khoa, paneer, and flavored milk, enhancing their knowledge of dairy technology.
03	Learners will understand and implement quality control measures, including grading butter and calculating overrun percentage.
04	Students will gain practical experience in product innovation and value addition, preparing them for roles in dairy processing and product development.

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)	
0	0	2	1	0	0	20	30	50



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Conduct platform tests to check the suitability of milk for processing and estimate its acidity.	4	15
2.	Determine the fat content in milk using Gerber's method.	4	10
3.	Determine the protein content in milk by Formal Titration (Pyne's method).	4	15
4.	Estimate the Solid-Not-Fat (SNF) content in milk using a lactometer.	3	10
5.	Prepare khoa or mava from the given milk sample and evaluate its quality.	4	10
6.	Prepare paneer and chhana, and use chhana to create a chhana-based product.	4	15
7.	Judge and grade the quality of butter and calculate the overrun percentage in butter.	4	15
8.	Prepare flavored or value-added milk-based products to assess processing techniques.	3	10
Total		30	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. "Technology of Dairy Products" by Ralph Early
2. "Dairy Processing: Improving Quality" edited by G.S. Gupta
3. "Handbook of Food Products Manufacturing: Principles, Bakery, Beverages, Cereals, Cheese, Confectionary, Fats, Fruits, and Functional Foods" edited by Y.H. Hui
4. "Traditional Indian Dairy Products" by Ramesh C. Chandan

(b) Open-source software and website:

1. **National Dairy Development Board (NDDB)** - <https://www.nddb.coop/> Offers resources on milk processing, quality testing, and product standards in India.
2. **Food and Agriculture Organization (FAO)** - <http://www.fao.org/home/en/> Provides guidance on dairy processing, handling techniques, and global dairy standards.
3. **FSSAI (Food Safety and Standards Authority of India)** - <https://fssai.gov.in/> Includes regulations for milk and milk products, along with safety and hygiene practices.
4. **Dairy Processing Handbook** - <https://dairyprocessinghandbook.com/> A comprehensive guide covering dairy processing techniques, including the preparation of various dairy products.
5. **ScienceDirect** - <https://www.sciencedirect.com/> Offers access to research papers and case studies related to dairy product analysis and innovation.
6. **OpenWetWare** - <https://openwetware.org/> Provides lab protocols and microbiological insights applicable to milk testing and processing.
7. **LibreOffice Calc** - <https://www.libreoffice.org/> Useful for recording experimental results, performing calculations like overrun percentage, and analyzing quality metrics.

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