



# CVM UNIVERSITY

Aegis: Charutar Vidya Mandal (Estd.1945)

## FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

**Programme:** Bachelor of Technology (Dairy Technology)

**Semester:** V

**Course Code:** 202200504

**Course Title:** Cheese Technology and Starter Cultures

**Course Group:** Professional Core Course

**Course Objectives:** The course is intended to make students familiar with the concepts of Cheese making technology, basics of cheese Varieties, storage and market concept of cheese, importance and roll of starter culture in cheese and fermented dairy products. To improve observation skills of students which they can use during manufacturing different types of cheese and fermented dairy products.

### 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	
2	0	4	4	50 / 18	50 / 17	25 / 9	25 / 9	150/53

\* J: Jury; V: Viva; P: Practical

### Detailed Syllabus:

Sr.	Contents	Hours
1	<b>Introduction to Cheese Industry:</b> Origin and history of development of cheese manufacture, status and scope in India and abroad. Definition, standards and classification of cheese	4
2	<b>Basics of cheese making:</b> Milk quality in relation to cheese making. Pre-treatment of milk, Additives, Action of Rennet during cheese making, importance of calculations for component in cheese milk	4
3	<b>Basics of Starter Culture:</b> History, classification, importance of starter Cultures in dairy industry, Probiotics and Special cultures, Metabolism of starter cultures (carbohydrate, protein, citrate)	3
4	<b>Starters in Cheese and Fermented Milk</b> Cheese Starters: Classification, desirable properties, Starter failures effect of antibiotic residues, sanitizers and bacteriophages, rennet substitutes, microbial rennet, Role of starters in the preparation of various fermented milks - yoghurt, acidophilus milk, Kefir, koumiss, Bulgarian milk, cultured buttermilk, Leben, Villi, Yakult, Nutritional and therapeutic significance of fermented products.	5



# CVVM UNIVERSITY

Aegis: Charutar Vidya Mandal (Estd.1945)

5	<b>Processing in Cheese Manufacture:</b> Manufacture of different varieties of cheese: Cheddar, Mozzarella, processed cheese, cheese spread, Cottage, Cream cottage, Gouda, Swiss.	9
6	<b>Cheese for Market:</b> Factors affecting yield of cheese. Packaging, storage. Ripening of cheese, Defects in cheese and cause	3
	<b>Total</b>	<b>28</b>

### List of Practical :

1	Familiarization with equipment , accessories and calculations for cheese milk
2	Standardization of milk for cheese making
3	Determination of rennet activity and quality of starter culture for cheese making
4	Manufacture of cheddar cheese
5	Manufacture of Cottage cheese
6	Manufacture of Cream Cottage cheese
7	Manufacture of Mozzarella cheese
8	Manufacture of Processed cheese
9	Manufacture of Processed cheese spread
10	Chemical analysis of Cheese
11	Visit of Cheese Plant.
12	Preparation of yoghurt/ probiotic lassi

### Reference Books:

1	Textbook on Cheese Technology by Atanu Jana, Ajay Gokhale , Jarita M Mallik and Harish Kumar; ICAR
2	Essentials of Cheese making by K G Upadhyay
3	Outlines of dairy technology by De, Sukumar
4	Banks, J.M. (1998). The Technology of Dairy Products. 2nd ed. R. Early (Ed.), Chapman and Hall, Blackie Academic and Professional, London

### Supplementary learning Material:

1	<a href="http://ecoursesonline.iasri.res.in/course/view.php?id=112">http://ecoursesonline.iasri.res.in/course/view.php?id=112</a>
2	<a href="https://agrimoon.com/cheese-technology-icar-ecourse-pdf-book/">https://agrimoon.com/cheese-technology-icar-ecourse-pdf-book/</a>

### Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods



# CVVM UNIVERSITY

Aegis: Charutar Vidya Mandal (Estd.1945)

### Internal Evaluation:

Teacher may consider some components for the continuous evaluation 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%	25%	25%	10%	10%	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 know the history and requirement for cheese making in relation to milk quality and equipment in dairy industry.	30
CO-2	Studies on Stature culture and how it imparts during cheese making	15
CO-3	To gain a knowledge about various types of fermented products available in different countries and its importance.	15
CO-4	To study different types of cheese manufacturing process and Understand the market requirement in cheese industry.	40

### Curriculum Revision:

Version:	1.0
Drafted on (Month-Year):	October 2022
Last Reviewed on (Month-Year):	--
Next Review on (Month-Year):	