

AC – 20/05/2025

Item No. – 6.18 (N) (3b) Sem. III

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE Vertical 3

Faculty of Science

Board of Studies in Chemistry

Second Year Programme

Semester

III

Title of Paper

Credits

I) Dairy Chemistry

2

From the Academic Year

2025-26

Title of Paper: Dairy Chemistry

Sr. No.	Heading	Particulars
1	Description the course:	The course aims to provide the information on various types of milk and milk products
2	Vertical :	Open Elective
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory in a semester)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: CO1: Understand the chemical composition and constituents of milk from various species (cow), and compare Indian and foreign breed milk characteristics. CO2: Explain the physicochemical properties of milk such as pH, acidity, density, color, flavour, and its food and nutritional value. CO3: Demonstrate knowledge of milk processing methods including filtration, clarification, pasteurization, homogenization, packing, storage, and transportation. CO4: Differentiate between various types of milk such as sterilized, homogenized, soft curd, flavoured, and vitaminised/irradiated milk along with their merits and demerits. CO5: Identify commonly used preservatives in milk and their purposes. CO6: Classify various milk products such as cream, butter, cheese and evaluate their composition, food value, and physicochemical properties. CO7: Explain the preparation and uses of various dried milk products like buttermilk powder, whey powder, cream powder, infant milk powder, shrikhand powder, ice cream mix powder, and cheese powder	
8	Course Outcomes: Student will be OC1: To Understand describe milk composition from various species and compare cow	

	breeds. OC2: To Explain milk's properties and assess its nutritional value. OC3: To understand milk processing methods and handling techniques. OC4: To differentiate types of milk and evaluate their pros and cons. OC5: To identify milk preservatives and their roles in quality maintenance. OC6: To classify milk products and explain their composition and food value.
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9	Modules
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Semester	Module	Description	Credits
III	I	Composition of milk, properties and various types of milk	02
	II	Preservatives in milk and various milk products	

MODULE	DESCRIPTION	LECTURE
I	1 Composition of milk, properties and various types of milk	15 L
	1.1 Introduction, constituents, chemical composition, and uses of milk of Indian breed and foreign breeds of cow, factors affecting composition, physicochemical properties of milk, acidity, pH, density, specific gravity, color and flavor of milk, food and nutritional value of milk. (07L)	
	1.2 Steps involved in Processing of Milk: collection, storage raw milk, preheating filtration, clarification, cooling and pasteurization, homogenization, packing, storage of processed milk and transportation. (03L)	
	1.3 Types of milk: Definition Advantages and Disadvantages, (i) Sterilized milk, (ii) Homogenized milk, (iii) soft curd milk, (iv) Flavored milk, (v) Vitaminized / irradiated milk- (05L)	
II	2 Preservatives in milk and various milk products	15 L
	2.1 Common preservatives used in milk (02L)	
	2.2 Milk products- Definition, Classification, Composition, Food & Nutritional value, Physicochemical properties of (i) Cream (ii) Butter (iii) Cheese (06L)	
	2.3 Dried milk products and their uses - butter milk powder, milk powder, cream powder, infant milk powder, shrikhand powder, ice-cream mix powder, cheese powder (07L)	

10 Reference Books

- (i) Text book of animal husbandry by – G.C.Banerjee
- (ii) Animal nutrition by - S.K. Ranjhan
- (iii) Livestock management by - N.R.S. Sastry, Thomas and Singh
- (iv) Outlines of Dairy Technology - S.K. De
- (v) Milk & Milk Products - Eckless, Combs & Macacy Modern Dairy Products - Lampert
- (vi) Dairy Chemistry - M.M. Rai
- (vii) Principals of Dairy Chemistry

11	Internal Continuous Assessment: 40%	External, Semester End Examination 60% Individual Passing in Internal and External Examination
12	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	

13

Format of Question Paper: for the final examination			
Theory	Credit	No. of Hours	Marks
	02	30	50
Internal Continuous Assessment: 40% (20 Marks)		External, Semester End Examination: 60% Individual Passing in Internal and External Examination (30 Marks)	
Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)		As per the Format of Question Paper	
Format of Question Paper: for the final examination			

Question Paper Pattern for 30 Marks:

Semester End Theory Examination:

- Duration - These examinations shall be of **one-hour** duration.
- Theory question paper pattern:
 - There shall be **02** questions, Question 1 carries 15 Marks based on Unit I and Question 2 carries 15 Marks based on Unit II.
 - All questions shall be compulsory with internal choice within the questions.

	Question	Particulars	Marks	Questions Based on
	Q.1	A) Objective Questions 06 out of 10	06	Unit I
		B) Subjective Questions 03 out of 05	09	
	Q.2	A) Objective Questions 06 out of 10	06	Unit II
		B) Subjective Questions 03 out of 05	09	
	Total		30	---

Sd/-
Sign of
Dr. Sunil Patil
Coordinator,
Board of Studies in
Chemistry

Sd/-
Sign of
Prin. (Dr.) Madhav Rajwade
Offg. Associate Dean,
Faculty of Science and
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Sign of
Prof. (Dr.) Shivram Garje
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