

- Coles, R., McDowell, D., & Kirwan, M. J. (Eds.). (2003). Food packaging technology (Vol. 5). CRC press.
- De, S. (1996). Outlines of dairy technology. Oxford University Press.
- DeMan, J. M., Finley, J. W., Hurst, W. J., & Lee, C. Y. (2018). Principles of food chemistry, 4th ed. Springer.
- Frazier, W.C. and Westhoff, D.C.(2004). Food Microbiology.New Delhi. TMH Publication
- Shadaksharaswamy, M., & Manay, N. S. (2011). Food, facts and principles. 4 th ed. New Age international publisher. New Age International.
- Meyer LH.(2006). Food Chemistry, CBS Publication, New Delhi.
- Potter N.N., Hotchkiss J.H. (2007). Food Science,5th ed. CBS Publication, New Delhi
- Ranganna, S. (2002). Handbook of Analysis of quality control for fruit and Vegetables products 2nd Ed. Tata Mcgraw Hill pub. Co. Ltd. New Delhi

Suggestive readings (if any)

- Jenkins, W.A. and Harrington, J.P. (1991). Packaging Foods with Plastics, Technomic Publishing Company Inc., USA.
- Norman, G. Marriott. and Robert, B. Gravani. (2018). Principles of Food Sanitation,6th ed. New York, Springer

DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-FT03) MILK & MILK PRODUCTS TECHNOLOGY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
MILK & MILK PRODUCTS TECHNOLOGY	4	3	0	1	Class XII pass with PCM/PCB	

Learning Objectives

1. Processing of milk and milk products at industry level
2. To know the compositional and technological aspects of milk
3. To study processed milk products

Learning outcomes

1. Understand the importance of Dairy industry
2. Understand the various properties and composition of milk.
3. Understand the technology of manufacturing of various products like Butter, ghee, Yoghurt, Dahi, Shrikhand, Ice-cream, Milk powder, channa, Paneer, Cheese (cheddar), Khoa
4. Understand market milk industry stages of milk processing and working of a few Dairy equipment's

SYLLABUS OF DSC-3

Unit I: Physical properties of milk (7 Hours)

• Color • Taste • pH and buffering capacity • Refractive index • Viscosity • Surface tension • Freezing & boiling point • Specific heat and electrical conductivity

Unit II: Composition of milk (16 Hours)

Unit Description: Macro nutrients and micronutrients of milk; milk sugar, fat and protein.

Subtopics: • Lactose (alpha and beta forms and their differences) • Significances of lactose in dairy industry • Composition and structure • Fat constants (Saponification value, Iodine value, RM value, Polenske value, peroxide value) • Difference between casein and serum protein • Different types of casein (acid and rennet) • Uses of casein

Unit III: Market milk industry and milk products (22 Hours)

Processing of milk and milk products

Subtopics: • Systems of collection of milk reception • Platform testing • Various stages of processing; Filtration, Clarification Homogenization, Pasteurization • Description and working of clarifier, cream separator, homogenizer and plate heat exchanger • Principle of processing of following milk products -Butter, ghee, yoghurt, dahi, shrikhand, ice-cream, milk powder, channa, paneer, cheese (cheddar), khoa

Practical components – 30 Hours

1. To determine specific gravity of milk
2. To determine acidity of milk
3. To perform COB test in milk
4. To estimate milk protein by Folin method
5. To estimate milk fat by Gerber method
6. To prepare casein and calculate its yield
7. To perform MBRT test in milk
8. Schematic diagram of pasteurization of milk in dairy industry
9. Study energy regeneration in dairy industry
10. Study and schematic diagram of CIP in dairy industry

Essential readings

- De, Sukumar. (2007). Outlines of dairy technology. Oxford University Press.
- Webb B.H.and Alford (2005). Fundamentals of dairy chemistry. CBS Publisher.

Suggestive readings

- P.F. Fox, T. Uniacke-Lowe and J.A.O' Mahony (2005). Dairy Science and Technology. Taylor & Francis.
- P. Walstra, Jan T.M. Wouters and Tom J. Geurts (2015). Dairy chemistry and Biochemistry. Springe.