

LECTURE SCHEDULE

Department: Dairy Chemistry

Course No. - DTC-122

Credit Hrs-3 (2+1)

Course Title: Chemistry of Milk

Course Teacher: Dr. Binita Rani

Theory

S. No.	Topics to be covered	No. of Classes
1	Definition and structure of milk and factors affecting composition of milk.	01
2	Nomenclature and classification of milk proteins.	01
3	Isolation, fractionation and chemical composition, physico-chemical properties of casein	02
4	Preparation of total whey proteins: α -Lactalbumin and β -Lactoglobuline.	01
5	Properties of α -Lactalbumin and β -lactoglobulin, Immunoglobulin and other minor milk proteins and non proteins nitrogen constituents of milk.	02
6	Hydrolysis and denaturation of milk proteins under different physical and chemical environments.	02
7	Estimation of milk proteins using different physical and chemical methods.	02
8	Importance of genetic polymorphism of milk proteins.	01
9	Milk enzymes with special reference to lipases, Xanthine Oxidase, phosphates, proteases and lactoperoxidase .	02
10	Milk carbohydrates their status and importance.	01
11	Physical and chemical properties of lactose, Sugar amine condensation, amadori re arrangement, production of hydroxyl methyl furfural (HMF).	01
12	Processing related degradation of lactose.	01
13	Definition, general composition and classification of milk lipids.	02
14	Nomenclature and general structure of glycerides.	02
15	factors affecting the fatty acid composition.	01
16	Milk phospholipids and their role in milk products.	02
17	Unsaponifiable matter and fat soluble vitamins.	02
18	Mineral in milk (a) major mineral (b) Trace elements.	02
19	Physical equilibria among the milk salts and Milk contact surfaces and metallic contamination.	02
	Total	30

Practical (DTC-122)

S. No.	Practical to be covered	No. of Classes
1	Sampling techniques of chemical examination of milk.	01
2	Determination of pH and titratable acidity of milk.	01
3	Determination of fat in milk by different methods.	01
4	Determination of total solids and solids not fat in milk	01
5	Determination of total milk proteins by Kjeldahal method.	01
6	whey proteins and NPN in milk. Estimation of alkaline phosphatase and lipase in milk.	01
7	Determination of lactose in milk	01
8	Determination of ash in milk.	01
9	Determination of phosphorus and calcium in milk.	01
10	Determination of chloride in milk.	01
11	Determination of temporary and permanent hardness of water.	01
12	Estimation of available chlorine from bleaching powder.	01
	Total	12

Suggested Reading:

1. A text book of dairy chemistry by Ling E. R. 2008 J.V. Publ. House, New Delhi
 2. Text book of dairy chemistry by Mathur MP, Datta R.D. & Dinakar, P 2005, ICAR Publ., New Delhi
 3. Fundamentals of dairy chemistry by Webb, B.H, Johnson, A. H. & Alford, J.A. 1965. AVI Publ. Co., New York.
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