

16FT303 DAIRY TECHNOLOGY

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	-	30	10	50	-	-	5	5

Course Description and Objectives:

This course deals with handling, processing and preservation of milk and milk products. The objective of this course is to impart knowledge about milk, milk processing methodologies, processing equipments, byproduct utilization and to bestow skills in the application of biological, chemical, biochemical, physics and engineering sciences in processing and preservation of milk and milk products.

Course Outcomes:

The student will be able to:

- understand and describe the inherent compositional variability of milk composition.
- learn the milk processing methodologies.
- gain knowledge about the various milk processing equipments.
- understand the production of various milk products and its byproducts.

SKILLS:

- ✓ *Determine physico-chemical properties of milk.*
- ✓ *Perform Standardization of milk for different products.*
- ✓ *Proficiency on processing and manufacturing methods of milk and dairy products.*
- ✓ *Identify the milk processing equipment required for a specific application.*

UNIT - 1**L-9**

GENERAL INTRODUCTION: Milk, Definition, Composition, Physico-chemical properties of milk. Colostrum and its nutritive value. Buying and collection of milk, Cooling and transportation of milk, different unit operations - receiving, processing and dispatch of milk.

UNIT - 2**L-9**

CREAM: Definition, Classification, Composition, Cream production, Factors affecting fat percentage of cream, Types of cream, Defects in cream, Their causes and Prevention.

BUTTER: Definition, Classification, Composition, Method of manufacture, Packaging and storage, Butter Over run, Theories of churning, Continuous butter making, Defects in butter, Their causes and Prevention.

UNIT - 3**L-9**

BUTTER OIL: Definition, Composition, Nutritive value, Methods of manufacture, Cooling, Packaging, Storage and Distribution, Defects in butter oil, Their causes and Prevention.

CHEESE: Cottage cheese, Method of manufacture, Different varieties of cheese, Defects in cheese, Their causes and prevention. Definition, Classification, Composition, Nutritive value, Manufacture of cheddar cheese, Curing of cheese.

UNIT - 4**L-9**

DIFFERENT MILK PRODUCTS: Special milks, Sterilized milk, Soft curd milk, Flavoured milks, Vitaminized/ Irradiated milk, Fermented milk, Merits, Types, Starter propagation, Natural butter milk, Cultured butter milk, Acidophilus milk, Bulgarian butter milk, Kumiss, Kefir, Yoghurt, Method of preparation and types, Standardized milk, Reconstituted milk, Recombined milk, Humanized milk, Miscellaneous milks,

UNIT - 5**L-9**

ICE CREAM: Definition, Classification, Composition, Nutritive value, Role of constituents in ice cream, Method of manufacture, Packaging, Hardening and storage, Over run in ice cream, Defects in ice cream, Their causes and prevention.

INDIGENOUS MILK PRODUCTS: Ghee, Khoa, Chhana, Paneer, Dahi and Shrikhand, Packaging and storage, By-products of dairy industry, Classification, Principle and method of utilization, Casein (industrial), method of manufacture, Defects, Uses, Casein (edible).

LABORATORY EXPERIMENTS**LIST OF EXPERIMENTS**

Total Hours: 30

1. Determination of physico-chemical properties of milk.
2. To conduct the platform tests of milk sampling of dairy products.
3. Efficiency of pasteurization of milk.
4. Performing MBRT Test of milk.
5. Detection of common adulterants in milk and milk products.
6. Preparation of flavoured milk.
7. Standardization of milk.
8. Preparation of milk powder by using spray dryer.
9. Preparation of Yoghurt with mixed culture.

ACTIVITIES:

- Report on standards of commercial milk products
- Prepare plant design and layout for dairy industry.
- New product development flow sheet.

TEXTBOOKS:

1. S. De, "Outlines of Dairy Technology", 1st edition, Oxford University Press, 1980.
2. J. N. Warner, "Principles of Dairy Processing", 3rd edition, Wiley Eastern Ltd., Delhi, India, 1976.

REFERENCE BOOKS:

1. K. S. Bangarappa and K. L. Acharya, "Indian Dairy Products", 2nd edition, Asia Publishing House, Bombay, 1974.
2. P. Walstra, "Dairy Science and Technology", 2nd edition, Taylor & Francis, 2006.