

Course : DAIRY AND FOOD ENGINEERING

Course outline-Theory

- Dairy development in India
- Engineering, thermal and chemical properties of milk and milk products
- Unit operation of various dairy and food processing systems
- Process flow charts for product manufacture
- Working principles of equipment for-
 - Receiving, Pasteurization, Sterilization, Homogenization, Filling and packaging, Butter manufacture
- Dairy plant design and layout
- Composition and proximate analysis of food products
- Deterioration in products and their controls
- Physical, chemical and biological methods of food preservation
- Changes undergone by the food components during processing, evaporation, drying, freezing, juice extraction, filtration, membrane separation, thermal processing
- Plant utilities requirement

Course outline-Practical

- Study of a composite pilot milk processing plant & equipments
- Study of pasteurisers
- Study of sterilizers
- Study of homogenizers
- Study of separators
- Study of butter churners
- Study of evaporators
- Study of milk dryers
- Study of freezers
- Design of food processing plants & preparation of layout
- Visit to multi-product dairy plant
- Determination of physical properties of food products

- Estimation of steam requirements
- Estimation of refrigeration requirements in dairy & food plant
- Visit to Food industry

Reference Books

- Ahmed T. 1997. *Dairy Plant Engineering and Management*. 4th Ed. Kitab Mahal.
- De S. 1980. *Outlines of dairy technology*. Oxford University press.
- McCabe WL & Smith JC. 1999. *Unit Operations of Chemical Engineering*. McGraw Hill.
- Sahay KM & Singh KK. 1994. *Unit Operations of Agricultural Processing*. Vikas Publ. House.
- Singh RP & Heldman DR. 1993. *Introduction to Food Engineering*. Academic Press.
- Toledo R T. 1997. *Fundamentals of Food Process Engineering*. CBS Publishers.