Credits: 4:0:0

Course Objective:
- To enable the students to understand the process engineering calculations in food industries

Course Outcome:
- On completion of the syllabus, the students will be able to develop skill and other engineering knowledge relating to various process engineering calculations essentially required for the food engineers to function effectively.

Unit I
**Basics of Food Engineering Calculations:** System of measurements; SI system of measurement; Units and Dimensions, Fundamental and derived units, Mole units – Mole, atomic mass and molar mass, Solids, liquids and solutions – important physical properties of solutions

Unit II

Unit III
**Material Balances of unit operations in Food systems:** Material balances – basic principles, law of conservation of mass, process flow diagram, system boundaries, total mass balance, component mass balance. Material balance of food processes involving Distillation, Absorption and Stripping, Extraction and leaching.

Unit IV
**Material Balances of unit operations in Food systems:** Material balance of food processes involving drying, evaporation and concentration by non-thermal processes involving membrane separations

Unit V
**Energy Balances:** Concept and units – Heat capacity – Sensible heat changes in gases at constant pressure – Sensible heat changes in liquids – Latent heat - calculations of enthalpy changes, general balance without reactions, heats of solution and mixing.

Text Book:

Reference Books: