BSS405 BIOCHEMICAL TECHNIQUES

Course Outcomes:

Upon successful completion of the course, students will be able to:

CO 1. Know the principle and applications of basic biochemical techniques.
CO 2. Understand the role of biological solutions and calculations
CO 3. Understand principle, instrumentation, applications and types of chromatography
CO 4. Know the principle, instrumentation, applications and types of centrifugation
CO 5. Understand the principle, instrumentation, applications and types of electrophoretic techniques

Unit I (13 hours)

Biological Solutions: preparation of solutions-Normality, molarity and molality: Acids and Bases, Buffers, salting in, salting out, Osmosis, Dialysis, Donnan Membrane Equilibrium, Viscosity of macromolecules, relationship with conformational changes, Density. **Chromatography** Principles of partition chromatography, paper, thin layer, column chromatography, ion exchange and affinity chromatography, gas chromatography, gel permeation chromatography, HPLC and FPLC.

Unit II (13 hours)

Centrifugation Principles of centrifugation, Svedberg's constant, concepts of RCF, different types of instruments and rotors, preparative, differential and density gradient centrifugation, analytical ultra-centrifugation, determination of molecular weights and other applications, subcellular fractionation. Filtration methods: Invention of filtration method. Various types of filter membranes and their applications.

Unit III (13hours)

Electrophoretic techniques Principles of electrophoretic separation. Continuous, zonal and capillary electrophoresis, different types of electrophoresis including paper, cellulose, acetate/nitrate and gel. Electroporation, pulse field gel electrophoresis, PAGE, SDS- PAGE and Iso electro focusing.