Course Code	Course Name	L-T-P-Credits	Year of Introduction
BT234	Instrumental Methods of Analysis Lab	0-0-3-1	2016

Prerequisite : Nil

Course Objectives

To provide hands on training in different spectrophotometric and chromatographic techniques, electrophoresis and density gradient separation that will equip the student in the selection of various analytical methods.

Syllabus (At least 11 experiments must be done)

1. Precision and validity of an experiment using absorption spectroscopy.
2. Colorimetry and spectrophotometry.
3. UV spectra of Nucleic Acids.
4. Validate Beer's – Lambert law.
5. Absorption maxima.
6. Extraction of lipids and separation using thin layer chromatography.
7. Separation of amino acids by paper chromatography& Determination of Rf value.
8. Column chromatography.
9. Determination of molecular weight of an enzyme by gel filtration.
10. Separation and identification of protein subunits.
11. Separation & identification of nucleic acids on gel electrophoresis.
12. Density gradient separation of proteins or nucleic acids.
13. Estimation of Thiamine and Riboflavin by Fluorimetry.
14. Biotin labeling of cellular constituents.
15. Estimation of turbidity using spectrophotometer
16. Determination of refractive index of sugar solutions using refractometry.

Expected outcome

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

- Use various analytical instruments to analyse biomolecules.
- Separate biomolecules using chromatography.
- Determine molecular weight of biomolecules by gel filtration.
- Separate biomolecules by density gradient separation.
- Label cellular constituents for identification.

Reference Books

1. Janson J.C and Ryden L– *Protein Purification – Principles, High Resolution Methods And Applications*, VCH Pub. 1989.
2. Belter P.A, Cussler E.L and Wei-Houhu – *Bioseparations – Downstream Processing For Biotechnology*, Wiley Interscience Pun. 1988.
3. Wilson K and Walker J –*Principles and techniques of Practical Biochemistry*, Cambridge University Press.
4. David T. Plummer –*An introduction to Practical Biochemistry*, McGraw- Hill.
5. Braun R.D –*Introduction to Instrumental Analysis*, Pharma Book Syndicate, 1987.
6. Ewing G.W –*Instrumental Methods of Chemical Analysis*, 5th Edition, McGraw-Hill, 1985.