

Course Title	Physical Chemistry Laboratory	Course No.	CYP6XX0
Department	Chemistry	L-T-P [C]	0-0-3 [1.5]
Offered for	M.Sc. (CY) Program	Type	Compulsory
Pre-requisite			

Objectives

The instructor will:

1. Introduction to the different spectroscopic and analytical techniques.
2. Introduction to the instrumentation and application of these methods.
3. Enable students to use such methods whenever needed by giving hands on experience with available instruments in the institute.

Learning Outcomes

The students are expected to:

1. Clear understanding of different analytical instruments.
2. Experimental verification of fundamental concept
3. Application of spectroscopic techniques as analytical tool in chemistry.

Course Content

1. Determination of the pI of an Amino Acid using pHmeter.
2. Determination of critical micellar concentration by conductometry and calculation of free energy of micellization
3. Determination of Heat Capacity of metals by Dynamic Scanning Calorimeter and verification of Dulong and Petit Method
4. Determination of the ligand-protein binding constant using Fluorescence quenching technique
5. Determination of ^1H spin-lattice relaxation time by NMR Inversion Recovery method
6. Determination of Gibbs free energy of the keto-enol tautomerism by ^1H NMR
7. Determination of bromobenzene surface coverage on silica by FTIR
8. Study of surface properties (surface energy and surface tension) of various surfaces and solutions.
9. Study of Redox reactions for understanding the reversibility of the reactions using cyclic voltammetry
10. Surface Adsorption Kinetics of Dyes on activated carbon using UV-Visible spectroscopy/calorimetry

Text Books

1. Halpern, A. M.; McBane, G. C. Experimental Physical Chemistry: A laboratory Textbook, 3rd ed. W. H. Freeman, 2006.

Reference Books

Literature papers from ACS Chemical Education