

Course Title: Advanced Techniques in Physical Chemistry**Course Code: CH-804****Credit Hours** 3-0**Prerequisite: Nil****Course Objectives**

This course will help the students to learn about various advanced techniques, principles, theory and their recommended instrumental settings required to conduct research experiments

Course Outcomes

The students will be expert in conducting the research experiments, after studying the details of these techniques. He can work in any advanced material's synthesis laboratory with full command.

Course Contents

High Resolution Transmission Electron Microscopy (HR-TEM), High Resolution Scanning Tunneling Electron Microscopy (HR-STEM), High Resolution Scanning Electron Microscopy (HR-SEM), X-ray Photoelectron Spectroscopy (XPS), Phosphorescence (PL), Time Resolved Phosphorescence, Fluorescence (FL), Raman Spectroscopy, Electron Spin Resonance (ESR/EPR), Atomic Force Microscopy (AFM), Elemental Analysis.

Recommended Books

1. Michel Che, Jacques C. Vedrine, Characterization of Solid Materials and Heterogeneous Catalysts, 2 Volume, Wiley-VCH, 2011.
2. Paul van der Heide, X-Ray Photoelectron Spectroscopy: An Introduction to Principles and Practices, November 2011, John Wiley & Sons, Inc. DOI:10.1002/9781118162897
3. Naryanaswami (Mohan) Ranganathan, Materials Characterization Modern Methods and Applications, 2016