

CH-336 Advanced Analytical Techniques

Credit Hours: 3-0

Prerequisite: Nil

Course Objectives

1. To improve comprehension of students about various analytical nuclear techniques.

Detailed Contents

2. Nuclear Magnetic Resonance Spectroscopy. Principles of NMR Spectroscopy, Properties of nuclei, Chemical shifts, Spin-spin coupling, Instrumentation details of NMR Spectrophotometer and their function, Continuous-wave NMR Spectroscopy, Pulsed Fourier Transform NMR Spectroscopy, Interpretation of H¹-NMR Spectra, Interpretation of C¹³- NMR Spectra, Use of NMR imaging in medicine, Analytical applications of NMR Spectroscopy.
3. Mass Spectrometry Principles of Mass Spectrometry, Instrumentation details of Mass Spectrometers and their function, Atomic Mass Spectrometry, Molecular Mass Spectrometry, Interpretation of Mass Spectra.

Course Outcomes

4. Students will acquire knowledge about different nuclear analytical techniques with special emphasis on the theoretical, instrumental and applications.

Recommended Books

1. Fundamentals of Analytical Chemistry by Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch, Mary Finch Publications USA. 9th Ed. 2014, ISBN-13: 978-0-495-55828-6
2. Principles of Instrumental Analysis by Douglas A. Skoog, F. James Holler and Stanley R. Crouch, Thomson Books/Cole Publications USA. 6th Ed. 2007, ISBN-13: 978-0-495-01201-6.
3. Instrumental Methods of Analysis by Willard M D Settle CBS Publisher, 7th Ed. 2007.
4. Fundamentals of Molecular Spectroscopy by Colin N Banwell, Elaine M McCash and Hiranya K Choudhury, McGraw Hill Education Publisher, 5th Ed. 2013.