

ADVANCED ANALYTICAL TECHNIQUES

Objectives

This course aims to demonstrate the knowledge and skill to select and use the appropriate spectrophotometric, chromatographic and electrochemical instrumentation for a specific chemical analysis.

Course Contents

UV Spectroscopy/Separations, Quantitative Infrared Spectroscopy, Flame Atomic Absorption Spectroscopy, Direct Potentiometry, Spectrofluorimetry: Determination of Fluid Volumes by Dye Dilution Techniques, TLC: Drug Monitoring Techniques, Column Techniques: Separation of Transition Metal Cations, Gas Chromatography, High Performance Liquid Chromatography, principles of IR-spectrometry and its use for compound identification; understanding of the working mechanism of the basic components of spectrometric and mass-spectrometric instrumentation, Amino acid sequencers, Balances, Bioreactors, Blotting Apparatus, Centrifuges, DNA Sequencers, Electroporation Instrument, Isoelectric Focusing Apparatus, Lyophilizer, Microarray Technology, Microscopy, Microtomy, Nuclear Magnetic Resonance Instrument, principles and application.

Books Recommended

1. Chemical Analysis: Modern instrumentation, methods and techniques, Francis Rouessac and Annick Rouessac, John Wiley & Sons, 2000, ISBN 0-471-97261-4.
2. Principles of Instrumental Analysis (5th ed), Douglas A. Skoog, F. James Holler and Timothy A. Nieman, Brooks Cole, 1997, ISBN 0-03-002078-6.
3. Spectrometrische analysetechnieken, M.T.C. de Loos - Vollebregt, Heron reeks - Bohn Stafleu Van Loghum, 2004, ISBN 90-313-4142-8.