

CH-904 Modern Trends in Analytical Chemistry

Credit Hours: 3-0

Prerequisite: Nil

Course Objectives

Modern Trends Chemistry course is designed for Ph.D. students for their understanding the developments in the analytical Instrumentation and advanced analysis.

Course Outcomes

The course will enable students to understand the recent developments in the analytical instrumentation and advanced applications of analytical techniques.

Course Contents

Spectrochemical information, Absorption and emission phenomenon, Components of optical instruments, Optical fibers, Advanced atomic spectroscopy, Advanced molecular absorption and emission spectroscopy, Surface characterization by spectroscopy and microscopy, Advanced mass spectrometry (Secondary ion, Laser microprobe, ion scattering and Rutherford backscattering), Scanning electron microscopy and energy dispersive X-rays, Scanning tunneling microscopy and Atomic force microscopy, transmission electron microscopy (TEM), Applications of these techniques in the environmental sciences, genomics and forensic imaging.

Recommended Books

- 1- Advanced Analytical Chemistry Illustrated Edition by Jessica Carol (Editor), Publisher : -978 :13-ISBN (2015) ;NY RESEARCH PRESS .1632380050
- 2- Advanced Analytical Chemistry, by Kiran Suryavanshi, Rajesh Dhake, Umesh Fegade, (2019).
- 3- Scanning Electron Microscopy and X-Ray Microanalysis, Joseph I. Goldstein Dale E. Newbury Joseph R. Michael Nicholas W.M. Ritchie John Henry, J. Scott David C. Joy, Springer, New York, NY, 2018, ISBN: 978-1-4939-6676-9.
- 4- Atomic Force Microscopy: Understanding Basic Modes and Advanced Applications, Edited by GREG HAUGSTAD, John Wiley & Sons, (2012) ISBN: 978-0-470-63882-8.
- 5- Electron Microscopy: Principles and Fundamentals, S. Amelinckx (Editor), Dirk van Dyck (Editor), J. van Landuyt (Editor), Gustaaf van Tendeloo (Editor), John Wiley & Sons, (2008) ISBN: 978-3-527-61455-4.