

CHE401XS2: Application of Analytical Methods

(30 Hours of lectures and tutorials)

Objectives:

- Demonstrate familiarity with separation techniques
- Discuss the fundamentals used in filtration techniques
- Analyze chemical samples quantitatively using electrochemical and spectroscopic method

Syllabus:

- Separation methods: Gas chromatography, high performance liquid chromatography, size exclusion chromatography, supercritical fluid chromatography, affinity chromatography, Capillary electrophoresis and electro chromatography, etc.
- Filtration techniques: Air filtration, Micropore filtration and Ultra Filtration.
- Electrochemical methods: Characterization of samples using electrochemical methods (Voltametry, Impedance spectroscopy, ChronoAmperometry, ChronoCoulometry, etc.), investigation of corrosion and inhibition of corrosion.
- Spectroscopic methods: Advanced spectroscopic techniques such as inductively coupled plasma spectroscopy and direct current plasma spectroscopy in chemical analysis

Evaluation:

- In-course Assessments 30%
- End-of-course Examination 70%

Recommended Readings:

- Harold H. Trimm, "Analytical Chemistry: Methods and Applications", Apple Academic Press Inc., First edition, 2011.
- M. Khopkar, "Basic Concepts of Analytical Chemistry", New Age International Publishers, Third Edition, 2014.
- Francis Rouessac, and Annick Rouessac, "Chemical Analysis: Modern Instrumentation Methods and Techniques", John Wiley & Sons, Second edition, 2013.