

INSTRUMENTAL METHODS FOR ENVIRONMENTAL ANALYSIS

Module I

Treatment of data in quantitative analysis: Accuracy, Precision, Standard deviation, and types of Errors, minimization of error, significant figures, criteria for rejection of data.

Module II

Principles of instrumentation; advantages, applications, and limitations of the following analytical techniques: Spectrophotometry, FTIR, NMR, Atomic absorption and Emission spectrophotometry, Flame photometry, Fluorimetry, Nephelometry, Inductively coupled plasma spectrometry and MS.

Module III

Electrochemical methods: Polarography, Pulse polarography, Ion selective electrodes, Oscilloscopic Polarography, Cyclic voltametry, Anodic Stripping Voltametry.

Module IV

Chromatography: Classification, general ideas about adsorption, partition, and column chromatography, paper and thin layer chromatography. Gas chromatography, High performance liquid chromatography (HPLC), Ion chromatography. Particle size and shape analyser. Auto- titration method.

Books & References :

1. Instrumental Methods of Analysis - HH Willard & LL Dean, John Wiley, 1976
2. Modern Methods of Chemical Analysis - RL .Recsok & LD Shields, John Wiley & sons, Inc, 1990
3. Instrumental Methods of Chemical Analysis -GW Ewing, McGraw Hill Book Company, Inc. 1975
4. Modern Methods of Chemical Analysis - RL Pecsok & LD Shields, John Wiley & Sons, Inc. 1986