

CH-424 Mass Spectrometry and Hyphenated Techniques

Credit Hours: 3-0

Pre-requisite: NIL

Course Objectives:

1. The objectives of the course are: -

To provide an understanding of theoretical aspects of Mass Spectrometry and related hyphenated techniques.

To impart knowledge about instrument design and applications of hyphenated techniques.

Course Outcomes:

2. Upon successful completion of the course, the student will be able to:

UNDERSTAND the theoretical aspects of Mass spectrometry and related hyphenated techniques.

SELECT appropriate hyphenated technique for chemical analysis.

Detailed contents:

3. *Mass Spectrometry*

Introduction; Instrumentation; Sample preparation; Interpretation of Mass Spectra; Applications; MS-MS & MS-MS-MS (two and three quadrupole mass spectrometry)

Gas Chromatography-Mass Spectrometry

Introduction; Instrumentation for GC-MS.; Applications

Liquid Chromatography-Mass Spectrometry

Introduction; Theory; Instrumentation ; Applications

Inductively Couple Plasma Mass Spectrometry

Brief historical development

Principle; Instrumentation; Sample preparation, Evaluation methods, Interferences; Applications.

Recommended Books:

1. Sharma, B. K., *Instrumental Methods of Chemical Analysis*, 24th ed., Goel Publishing House, Meerut, India, (2005).
2. Skoog, D. A. and West., D. M., *Fundamentals of Analytical Chemistry*, 8th ed., HotReinehart Inc., London, (2008).

3. Kellner, R., Mermet, J.M, Otto, M., Valcarcel, M., Widmer, H.M., *Analytical Chemistry : A Modern Approach to Analytical Science*, Wiley-VCH, (2004)
4. Christian, G. D., *Analytical Chemistry*, 6th ed., John-Wiley & Sons, New York, (2006).
5. Harris, D. C., *Quantitative Chemical Analysis*, 8th ed., W. H. Freeman and Company, New York, (2011).
6. Kealey, D. and Haines, P. J., *BIOS Instant Notes in Analytical Chemistry*, BiosScientific Publishers Limited, Oxford, UK, (2002).