



Organic Compounds Spectroscopy

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Prerequisites
CHM	224	Organic Compounds Spectroscopy	2	1	0	2	CHM 221

Objectives:

- Survey of spectroscopic techniques used to elucidate the structures of organic compounds.
- The course will deliver the basic knowledge about the spectroscopy for undergraduate students in organic chemistry and its application in industry and pharmaceutical industry. The course will improve the scientific logic strategy to solve chemical problems related to structures and reactivity.

Syllabus:

UV/VIS: Introduction, Theory and instrumentation, Absorption laws, Solvents, Characteristic Absorption of Organic Molecules.

Infrared Spectrometry: Introduction, short notes about theory and Instrumentation, Interpretation of spectra, Characteristic Absorption of Organic Molecule.

Proton NMR Spectroscopy: Introduction, Chemical Shift, Spin Coupling; Multiplets; Spin System, Proton on Oxygen; Nitrogen; Sulphur Atoms, Exchangeable Protons, Simple Introduction for Chemical Shift Equivalence with examples, Magnetic Equivalent (Spin-Coupling Equivalence), AMX, ABX, and ABC Rigid System with Three Coupling Constants, Chirality, Vicinal and Geminal coupling, Low-Range Coupling.

Carbon 13NMR Spectrometry: Introduction, Theory (Decoupling Techniques, Chemical Shift Scale and Range, Solvents), Interpretation of simple ¹³C spectra, Chemical Shift Equivalence, Chemical Classes and Chemical Shifts.

Textbook

Silverstein; R. M., Webster; F. X.; David; J. K. Spectrometric Identification of Organic Compounds; 7th ed, Wiley: New York, 2005.

References

1. Lambert, J.; Shurvell, H. F.; Lightner, D. A.; Cooks, R.; Organic Structural Spectroscopy, Prentice Hall Inc, 1998. ISBN-13: 978-0132586900, ISBN-10: 0132586908.
2. Williams, D. H.; Spectroscopic Methods in Organic Chemistry, 6th ed., McGraw-Hill Higher education, ISBN-10: 007711812X, ISBN-13: 978-007118229.
3. Anderson, R. J.; Bendell, D. J.; Groundwater, P.W.; Organic Spectroscopy Analysis, Royal Society of Chemistry, 2004. ISBN: 0-85404-476.

