

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
CHEM- 428	Organic Chemistry (Sp. Theory-I)	4	VIII
Year	Discipline		
4	Chemistry		

SYLLABUS OUTLINE:

1. Nuclear Magnetic Resonance Spectroscopy:

Nuclear magnetic resonance: Basic principles, theory, spin flipping, nuclear precession and absorption of electromagnetic radiation, spin relaxation, basic introduction of 1-D (^1H and ^{13}C) NMR spectroscopy, chemical shifts and integration curve, instrumentation, spin-spin splitting and coupling constants. Structure elucidation of small molecules. Introduction of 2-D NMR spectroscopy.

2. Mass Spectroscopy:

Introduction; types, Isotopic abundance, molecular and metastable ions; fragmentation pattern, applications of mass spectroscopy in different classes of organic chemistry, interpretation of mass spectra of small organic molecules.

3. Natural Products:

Introduction, classification, isolation, biosynthesis and general methods for the structure determination of alkaloids (piperine, Nicotene, Cocaine, Morphine, Quinine), steroids (cholesterol, progesterone, *estrogens*, androgens, glucocorticoids mineralocorticoids) and terpenoids (Triterpenes, α -amyrin, β -amyrin, Ursolic acid, Oleanolic acid).

RECOMMENDED BOOKS:

1. Organic Chemistry, Volume II by I.L. Finar; 5th ed. Longman scientific, 1975.
2. Spectroscopic Methods in Organic Chemistry 6th ed. by D. Williams and I. Fleming. Wiley-VCH, 1991.
3. Spectrometric identification of Organic Compounds 6th ed. by R. M. Silverstein and F. X. Webster, Wiley, 2007.
4. Organic Spectroscopy and Chromatography by M Younas, ILMI, Pakistan, 2007.
5. Spectroscopy by Pavia, Lampman, Kriz, 2nd ed., Harcourt Brace College Publishers, 1996.
6. Biosynthesis of Natural Products, Paolo Manito, John Wiley & Sons, 1980.