



Code	Subject Title	Cr. Hrs	Semester
CHEM-317	Organic Chemistry	4	VI
Year	Discipline		
3	Chemistry-I, II		

**SYLLABUS OUTLINE:****1. Free radical Reactions:**

Introduction, generation methods, relative stability, structure, free radical reactions and industrial applications.

**2. Oxidation and Reduction reactions:****(a) Oxidation Reactions:**

Introduction, Oxidation of saturated hydrocarbons, olefinic double bonds, aromatic rings, systems containing oxygen such as alcohols, aldehydes, ketones, oxidative decarboxylation, of acids, oxidation of systems containing nitrogen such as amines, hydrazines etc..

**(b) Reduction Reactions:**

Introduction, Reduction of alkenes, alkynes, and aromatic rings, hydrogenolysis, reduction of benzylic and allylic systems, aldehydes and ketones, alcohols, pinacols, epoxides, acids and their derivatives, Reduction of system containing nitrogen such as imines, oximes and nitro compounds

**3. Spectroscopy:****(a) IR Spectroscopy:**

Electromagnetic radiations: IR; modes of vibration, sampling techniques, factors influencing the vibration frequencies and industrial applications

**(b) UV Spectroscopy:**

Ultraviolet (UV) or electronic spectroscopy: electronic transition; factors influencing the  $\lambda_{\text{max}}$  value.

**RECOMMENDED BOOKS:**

- Organic Chemistry, Volume I (6th ed.) & II (5th ed.) by I.L. Finar, Pearson Education (Singapore) Pte Ltd, 2008.
- March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, 6th ed. by Michael B. Smith, Jerry March, Wiley, 2007.
- Organic Chemistry, 6th ed.; by S. H. Pine, McGraw Hill: New York, 1987.
- Organic Chemistry 6th ed. by Francis A. Carey, McGraw Hill, 2005.
- Organic Chemistry 6th ed. by R. T. Morrison, R. N. Boyd, and R. K. Boyd, Benjamin Cummings, 1992.
- Modern Synthetic Reactions 2nd ed. by H.O. House, W.A. Benjamin Inc., Menlo Park, CA
- Principles in Organic Synthesis by R.O.C Norman & J. M. Coxon, 1993, Chapman and Hall, 1993.
- Organic Chemistry by Jonathan Clayden, Nick Greeves, Stuart Warren, Oxford University Press 2000.



9. Spectroscopic Methods in Organic Chemistry 6th ed. by D. Williams and I. Fleming. Wiley-VCH, 1991.
  10. Spectrometric identification of Organic Compounds 6th ed. by R. M. Silverstein and F. X. Webster, Wiley, 2007.
  11. Organic Spectroscopy and Chromatography by M Younas, ILMI, Pakistan, 2007.
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