



Code	Subject Title	Cr. Hrs	Semester
CHEM-305	Organic Chemistry	4	V
Year	Discipline		
3	Chemistry-I, II		

SYLLABUS OUTLINE:**1. Acid-base strength:**

pKa and Ka values, electronic effects (Inductive and resonance effects), field effect, solvent effect, hyper-conjugation, hydrogen bonding, steric and stereo-chemical effects, and hybridization.

2. Stereochemistry:**(a) Conformation Analysis**

The concept of conformational analysis in ethane, propane, n-butane, pentane, cyclopentane, cyclohexane, substituted alkanes, substituted cycloalkanes and decalins.

(b) Optical isomerism:

Configuration, Chirality and symmetry, optical isomerism upto three chiral carbon atoms, enantiomers and diastereomers, R and S nomenclature, Racemates, Racemization and Resolution of Racemates, epimerization. Walden inversion, Stereoisomerism in biphenyls, allenes and spiro-compounds

(c) Geometrical isomerism

Cis & Trans, and Z & E conventions, Determination of configuration, Geometrical isomerism in cyclic compounds.

3. Active Methylene Compounds:

Alkylation, arylation, and acylation of active methylene compounds, Acid and base catalysed aldol condensation. Conditions, mechanism and synthetic applications of the following reactions; Claisen, Claisen Schmidt, Knoevenagel, Perkin, Reformatsky, and Stobbes condensations, Darzen's glycosidic ester synthesis, Mannich and Wittig reactions.

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, 5th 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, Chapman and Hall, 1993
- Organic Chemistry by Jonathan Clayden, Nick Greeves, Stuart Warren, Oxford University Press 2000.