

SEMISTER –I		
Code: 102102	Title : Organic Chemistry	Credits : 4
Objectives : - I) To describe the chemical and molecular processes that take place in organic chemical reactions. II) To perform aliphatic nucleophilic substitution reactions. III) To differentiate the various types of aliphatic nucleophilic substitution. IV) To identify the stereochemical notations. V) To explain concepts of organic acids & bases.		
Paper -I		60 Hours
Unit I	Nature of Bonding in Organic Molecules :- Delocalized chemical bonding, conjugation, cross conjugation, resonance, hyperconjugation, -molecular orbitals, annulenes, π tautomerism. Aromaticity in benzenoid and non-benzenoid compounds, alternant and nonalternant compounds, Huckel rule, energy level of aromaticity, Bonds weaker than covalent - addition compounds, crown ether complexes and cryptands, inclusion compounds, cyclodextrins, catenanes and rotaxanes.	15 Lectures
Unit II	Reaction Mechanism :- Structure and Reactivity Types of Mechanisms, Types of reactions, Thermodynamic and Kinetic requirements, Kinetic and Thermodynamic control, Hammond's postulate, methods of determining mechanisms, isotope effects.	15 Lectures
Unit III	Stereo-chemistry :- Elements of symmetry, chirality, Enantiomeric and diastereomeric relationships, R and S, E and Z nomenclature. Molecules with more than one chiral center, Threo and Erythro isomers, Prochiral relationships, groups and faces, stereospecific and stereoselective reactions. Optical activity in the absence of Chiral Carbon (Biphenyls, allenes and Spiranes), Chirality due to helical shape. Methods of resolution, optical purity, stereochemistry of the compounds containing Nitrogen, Sulphur and phosphorous. Conformational analysis of cycloalkanes, Mono and disubstituted cyclohexanes, decalins, effect of conformation on reactivity	15 Lectures
Unit IV	Acids and Bases: - Factors affecting acidity and basicity, Electronegativity and inductive effect, resonance, bond strength, electrostatic effects, hybridization, aromaticity and solvation. Comparative study of acidity and basicity of organic compounds on the basis of pKa values, Levelling effect and non-aqueous solvents. Acid and base catalysis , general and specific catalysis with examples.	15 Lectures

Reference Books :

1. Advanced Organic Chemistry, IV Edition: Jerry March
2. Stereochemistry of Carbon Compounds: E. L. Eliel
3. Advanced organic Chemistry, Part-A and Part-B: F. A. Carey, & R. J. Sundburg.