

SEMISTER –II		
Code: 202102	Title : Organic Chemistry	Credits : 4
Objectives : 1. To describe various reactions involved in addition to C-C and C-O double bond 2. To Explain aromatic nucleophilic substitution reactions 3. To demonstrate/apply the concepts involved in oxidation & reduction reactions. 4. To describe the basic concepts in aromaticity.		
Paper -I		60 Hours
Unit I	Aromatic Electrophilic and Nucleophilic Substitutions Electrophilic Substitutions:- The arenium ion mechanism, orientation and reactivity, energy profile diagram. The ortho/para ratio, IPSO substitution, orientation in other ring system, Recapitulation of halogenation, nitration, sulphonation and Fridel Craft's reaction, diazonium coupling. Nucleophilic Substitution: The S _N Ar, S _N 1, benzyne mechanism, Effect of substrate structure, leaving group and attacking nucleophile on reactivity.	15 Lectures
Unit II	Addition to Carbon –Carbon multiple bond:- Mechanism and stereochemical aspect of addition reaction involving electrophile, nucleophile and free radicals. Regioselectivity and chemoselectivity, orientation and reactivity, Michael addition, Sharpless asymmetric epoxidation.	15 Lectures
Unit III	Oxidation and Reduction:- CrO ₃ (Jones reagent) PDC, PCC, KMnO ₄ , MnO ₂ , Swern, SeO ₂ , Pb (OAc) ₄ , Pd/C, OsO ₄ , mCPBA, O ₃ , NaIO ₄ , HIO ₄ , R ₃ SiH, Bu ₃ SnH, Boranes & Hydroboration reactions, MVP, H ₂ / catalyst, Wilkinson's catalyst, NaCNBH ₃ , NH ₂ NH ₂ , DIBAL, etc	15 Lectures
Unit IV	Aromaticity: - 2.2.1. Structural, thermochemical, and magnetic criteria for aromaticity, including NMR characteristics of aromatic systems. Delocalization and aromaticity. 2.2.2. Application of HMO theory to monocyclic conjugated systems. Frost-Musulin diagrams. Huckel's (4n+2) and 4n rules. 2.2.3. Aromatic and antiaromatic compounds up-to 18 carbon atoms. Homoaromatic compounds. Aromaticity of all benzenoid systems, heterocycles, metallocenes, azulenes, annulenes, aromatic ions and Fullerene.	15 Lectures

Reference Books :

1. Advanced Organic Chemistry, IV Edition: J. March
2. Advanced organic Chemistry, Part-A and Part-B: F. A. Carey, & R. J. Sundburg.
3. A Guide Book to Mechanism in Organic Chemistry: Peter Sykes.
4. Organic Chemistry: Clayden and Greeves
5. March's Advanced Organic Chemistry: Reactions, Mechanisms and Structure, Michael B. Smith, Jerry March, Wiley
6. Advanced Organic Chemistry: Reactions and mechanism, L.G. Wade, Jr., Maya Shankar Singh, Pearson Education.
7. Organic Synthesis, Jagdamba Singh, L.D.S. Yadav, Pragati Prakashan.