CURRICULUM PLAN (EVEN SEMESTER 2024-25)

Teacher Name: Dr. Anjali Sehrawat
Course: BSc. (H) Chemistry , II year (Semester IV)
Paper Name: Electrochemical Cells, Chemical Kinetics and Catalysis (NEP) (1 period per week)
UPC: 2172012403

Contents	Allocation of lectures	Month wise schedule to be followed	Tutorial/Assignments/ Presentations etc.
Unit-3: Spectroscopy of Organic Compounds **UV-Visible Spectroscopy:** Types of electronic transitions, λmax, chromophores and Auxochromes, bathochromic and hypsochromic shifts, intensity of absorption, factors affecting λmax values, application of Woodward Rules for calculation of λmax , distinction between cis and trans isomers by UV; Colour concept, Theory of colour and constitution-Witt's theory, valence bond and molecular orbital theory. **IR Spectroscopy:** Fundamental and non-fundamental molecular vibrations; IR absorption positions of O and N containing functional groups; effect of H-bonding, conjugation, resonance and ring size on IR absorptions; fingerprint region and its significance, application of IR in functional group analysis. **H-NMR Spectroscopy:** Basic principles of proton magnetic resonance, chemical shift and factors, influencing it; equivalent and non-equivalent protons (chemical and magnetic equivalence), Spin–Spin coupling and coupling constant; Anisotropic effects in alkene,	**27**	**1st week of January- 2nd week of March**	● **Syllabus Overview** ● **References Books** ● **Lectures** ● **Numericals**

alkyne, aldehydes and aromatics. Interpretation of NMR spectra of simple comp			
Unit-2: Pericyclic Reactions Introduction: Types of pericyclic reactions, Symmetry in σ and π molecular orbitals, Frontier Molecular Orbitals. Electrocyclic Reactions: Conrotatory and Disrotatory motion in ring opening and ring closing reactions in (4n) and (4n+2) π electron systems, FMO method, Woodward Hoffmann rule. Cycloaddition Reactions: [2+2] and [4+2] π cycloaddition reactions, Diels Alder reaction (electron rich and electron poor dienes and dienophiles, Stereochemistry, Alder rule of endo addition). Sigmatropic Reactions: [1,3], [1,5] and [3,3] **Photochemistry** Introduction and basic principles of photochemistry, photochemical energy, photolytic cleavage, photochemistry of carbonyl compounds (Norrish type 1, Norrish type 2 and Peterno Buchi reactions) 24	**12**	**3rd week of March – 1st week of April**	● **Lectures** ● **Class discussion** ● **Assignment** ● **Problem solving**
Unit-1: Polynuclear Hydrocarbons Introduction, classification, structure, nomenclature and uses. Aromaticity of polynuclear hydrocarbons, structure elucidation of Naphthalene and general methods of preparation of naphthalene and anthracene. Relative reactivity of naphthalene and anthracene in comparison to benzene. Discussion on the following reactions (with mechanism) for Naphthalene and	**6**	**3rd week of April- 4th week of April**	● **Lectures** ● **Problem solving** ● **Class discussion**

Anthracene: Addition reactions, Oxidation, Electrophilic substitution- Friedel Craft reaction, Chloromethylation, Halogenation, Formylation, Nitration and sulphonation. Reduction reaction and Diels Alder reaction.			

Dr. Anjali Sehrawat
Department of Chemistry