

Teaching Plan 2024

B.Sc. Chemistry (H) CBCS, VI Sem

Subject: Spectroscopy and Applied Organic Chemistry.

Teacher: **Dr. Raghavender M**

Week	Dates From – To	Topic
1.	22/01/2024 - 27/01/2024	UNIT-1: General principles Introduction to absorption and emission spectroscopy & UV Spectroscopy: Types of electronic transitions, λ_{max} , Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption.
2.	29/01/2024 - 03/02/2024	Application of Woodward Rules for calculation of λ_{max} for the following systems: α,β -unsaturated aldehydes, ketones, carboxylic acids and esters.
3.	05/02/2024 - 10/02/2024	Conjugated dienes: alicyclic, homo annular and hetero annular; Extended conjugated systems (aldehydes, ketones and dienes); distinction between cis and trans isomers by UV.
4.	12/02/2024 - 17/02/2024	IR Spectroscopy: Fundamental and non-fundamental molecular vibrations; IR absorption positions of O, N and S containing functional groups.
5.	19/02/2024 - 24/02/2024	Effect of H-bonding, conjugation, resonance and ring size on IR absorptions; Fingerprint region and its significance; application of IR in functional group analysis.
6.	26/02/2024 - 02/03/2024	NMR Spectroscopy: Basic principles of Proton Magnetic Resonance, chemical shift and factors influencing it; Equivalent and non-equivalent protons, Spin – Spin coupling and coupling constant; Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple compounds.
7.	04/03/2024 - 09/03/2024	Applications of IR, UV and NMR for identification of simple organic molecules. UNIT-2: Dyes-Classification, Colour and constitution; Mordant and Vat Dyes; Chemistry of dyeing. Synthesis and applications of Azo dyes – Methyl orange, Congo red;
8.	11/03/2024 - 16/03/2024	Triphenyl methane dyes-Malachite green, Rosaniline and Crystal violet; Phthalein Dyes – Phenolphthalein; Natural dyes –Structure elucidation and synthesis of Alizarin and Indigotin; Edible Dyes with examples.
9.	18/03/2024 - 23/03/2024	UNIT-3: Pharmaceutical Compounds-Classification, structure and therapeutic uses of antipyretics - Paracetamol (with synthesis); Analgesics- Ibuprofen (with synthesis); Antimalarials - Chloroquine (with synthesis); Antitubercular drugs – Isoniazid.
10.	26/03/2024 - 30/03/2024	Mid- semester break
11.	01/04/2024 - 06/04/2024	Test for unit 1 to 3, presentations for internal assessment. An elementary treatment of Antibiotics and detailed study of chloramphenicol, Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine).
12.	08/04/2024 - 13/04/2024	UNIT-4: Polymers-Introduction and classification including di-block, tri-block and amphiphilic polymers; weight average molecular weight, number average molecular weight, glass transition temperature (T_g) of polymers; Polymerisation reactions -Addition and condensation. Mechanism of cationic, anionic and free radical addition polymerization.
13.	15/04/2024 - 20/04/2024	Ziegler-Natta polymerisation of alkenes. Preparation and applications of plastics – thermosetting (phenol-formaldehyde, Polyurethanes) and thermosoftening (PVC, polythene);

		Fabrics – natural and synthetic (acrylic, polyamide, polyester)
14.	22/04/2024 - 27/04/2024	Rubbers – natural and synthetic, Buna-S, Chloroprene and Neoprene. Vulcanization - Polymer additives; Introduction to Biodegradable and conducting polymers with examples.
15.	29/04/2024 - 04/05/2024	Remedial class & Tests / Assignments.
16.	06/05/2024 - 11/05/2024	