

Course Code	Course Title	C	H	I	E	T
17P4CMC10	ORGANIC CHEMISTRY-IV	4	4	25	75	100

UNIT I TERPENOIDS AND FLAVONES 12 Hrs

Terpenoids: Classification, nomenclature, occurrence, Isolation, general methods of structure determination, isoprene rule, Structural determination, stereochemistry and synthesis of the following representative molecules: menthol, zingiberene and abietic acid.

Anthocyanins and flavones: Flavonoids: general method of structural determination. General nature of anthocyanins - synthesis of flavones chalcone, and anthocyanidins. Structural elucidation of caffeine.

UNIT II STEROIDS 12 Hrs

Occurrence, nomenclature, basic skeleton and stereochemistry isolation, structure determination and synthesis of cholesterol, equilenin, Androsterone, Testosterone, Estrone, Progesterone, Biosynthesis of steroids.

UNIT III HETEROCYCLES 12 Hrs

Nomenclature, aromatic heterocycles - heteroaromatic reactivity and tautomerism in aromatic heterocycles, Non-aromatic heterocycles - conformation, stereo electronic effects, heterocyclic synthesis - cyclization reactions and cycloaddition reactions, small ring heterocycles - oxiranes, aziridines, pyridine.

Benzo- fused five membered heterocycles: Indole, benzofurans, benzothiophenes.

UNIT IV ALKALOIDS AND PROSTAGLANDINS 12 Hrs

Alkaloids: Definition, nomenclature and physiological action, occurrence, isolation, general methods of structural elucidation, degradation, classification based on nitrogen heterocyclic ring, role of alkaloids in plants - Structure, stereochemistry and synthesis of the following: quinine, nicotine and morphine.

Prostaglandins: Occurrence, nomenclature ,classification, biogenesis and physiological effects. Synthesis of PGE₂ and PGF_{2α}

UNIT V CARBOHYDRATES AND GREEN CHEMISTRY 12 Hrs

Conformation of monosaccharides, structure and functions of some important derivatives of amino sugars, glycosides. Disaccharides: Sucrose. Polysaccharides: cellulose, starch. Carbohydrate metabolism –Kreb’s cycle, glycolysis.

Green chemistry: Importance -12 principles of green chemistry - solid state and solvent free organic reactions – using supported reagents- microwave radiations- ionic liquids.

Text Book(s):

1. Finar, I.L., “Organic Chemistry”, Vol. II, Sixth Edition, Pearson Education Pvt. Ltd., Singapore, 2006.

2. Joule, J.A. and Mills, K., "Heterocyclic Chemistry", Fourth Edition, Blackwell Publishing Company, New York, 2004.
3. Sanghi, R. and Srivastava, M.M., "Green Chemistry (Environmental Friendly Alternatives)", First Edition, Narosa Publishing House, New Delhi, 2003.

Reference Books:

1. Bansal, K., "Heterocyclic Chemistry", Fourth Edition, New Age International, New Delhi, 2005.
2. Ahluwalia, V.K., "Chemistry of Natural Products", First Edition, Vishal Publishing Co, Jalandhar, 2008.
3. Desai, K. R., "Green Chemistry (Microwave Synthesis)", First Edition, Himalaya Publishing House, Mumbai, 2005.
4. Ahluwalia, A.K., "Green Chemistry (Environmentally Benign Reactions)", First Edition, Aru Books India, New Delhi, 2006.
5. Jain, R.; Sahay, A.; Soni, U.; Pimplapure, S. Heterocyclic compounds, Pragati Prakashan, First edition, 2015.