Basics of Organic Chemistry – II

Course Code: BEB406
Contact Hours: 60

Credit: 04 (L-3, T-1, P-0)
MM: 100

After going through the course the teacher trainee will be able to –

- Analyze the structures, properties of organic molecules
- Synthesize organic compounds of desirable properties
- Successfully demonstrate & perform the quantitative estimation of functional groups

Course Outline:

Unit I: Functional Groups

- Nomenclature and Classification, structure and bonding, methods of formation, physical properties and chemical reactions of Alcohols, Phenols, Ethers, Aldehydes, Ketones, Halides, Nitro compounds and Carboxylic acids.
- Mechanisms of reactions

Unit II: Organometallic Compounds

- Organomagnesium compounds: The Grignard reagents-formation, structure and chemical reactions
- Organozinc compounds: formation and chemical reactions
- Organolithium compounds: formation and chemical reactions
- Organosulphur Compounds: Nomenclature, structural features, methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and suiphaguanidine

Unit III: Heterocyclic Compounds

- Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives.
- Comparison of basicity of pyridine, piperidine and pyrrole.

Unit IV: Polynuclear aromatic compounds

- Criterion of Aromaticity: Huckel's rule and its application to homonuclear and heteronuclear compounds.
- Polynuclear Aromatic Compounds: Preparation and properties of the following compounds: naphthalene (including structure elucidation), anthracene and phenanthrene.

Unit V: Organic Synthesis via Enolates

- Organic Synthesis via Enolates Acidity of of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate by Claisen condensation,
- Keto-enoltautomerism of ethyl acetoacetate, Synthetic applications of acetoacetic ester, Alkylation of 1,3-dithianes. Alkylation and acylation of enamines

Suggested Reading:

- Organic Chemistry, **Morrison and Boyd**, Prentice Hall.
- Organic Chemistry, **L.G. Wade** Jr. Prentice Hall
- Fundamentals of Organic Chemistry **Solomons and Fryle**, John Wilev.
- Organic Chemistry, Vol. I, II and III **S.M. Mukherji, S.P. Singh and R.P. Kapoor**

Dean
Faculty of Education
Invertis University

Invertis University
Bareilly

Head
Department of Education
Faculty of Education & Mass Comm
Invertis University, Bareilly (UP)

- Organic Chemistry: **Morrison and Boyd**, Prentice Hall of India Pvt. Ltd. New Delhi□Organic Chemistry, **Arun Bahl & B. S. Bahl**, S.Chand& Co. New Delhi□Standard Methods of Chemical Analysis, W.W. Scott, The Technical Press.
- Experimental Organic Chemistry, Vol.Iand II, P.R. Singh, D.S> Gupta and K.S. Bajpai, Tata McGraw Hill.
- Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.

Dean
Faculty of Education
Invertis University
Bareilly-243123, U.P

Head
Department of Education
Faculty of Education & Mass Comm
Invertis University, Bareilly (UP)

Registrar
Invertis University
Bareilly