Organic Chemistry (2)

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Prerequisites
CHM	221	Organic Chemistry (2)	4	2	3	1	CHM 121

Objectives:

- This course is aimed to enable students to gain knowledge about functional groups in the organic chemistry varying from aliphatic to aromatic, their reaction, and their importance.
- The course will deliver and teach an account for the physical properties and chemical reactivity of any organic compound on the basis of molecular structure and functional group has, recognize important and importance of substances and chemical processes which have practical applications in household, laboratory, industry, and medicine.

Syllabus:

Benzene and Aromaticity: Sources of aromatic hydrocarbons, Structure and Stability of Benzene, Aromatic heterocycles, Polycyclic Aromatic Compounds.

Chemistry of Benzene: Bromination of aromatic rings, Alkylation of aromatic rings, Trisubstituted benzenes, Nucleophilic aromatic substitution, Synthesis strategies.

Alcohols and Phenols: Properties of alcohols and phenols, Preparation of alcohols, Some reactions of alcohols, Preparation and uses of phenols, Reactions of phenols, Synthesis strategies. **Ethers and Epoxides; Thiols and Sulfides:** Naming ethers, Structure, Properties, and sources of ethers, Reactions of ethers, Cyclic ethers, Crown ethers, Thiols and sulfides.

Aldehydes and Ketones- Nucleophilic Addition Reactions: Preparation of aldehydes and ketones, Oxidation of Aldehydes and Ketones, Nucleophilic addition reactions of aldehydes and ketones, **Carboxylic Acids and Nitriles:** The Importance of carboxylic Acids, Preparation of carboxylic acids, Reactions of carboxylic Acids, Preparation of Nitriles, hydrolysis. **Carboxylic acid derivatives and nucleophilic Acyl Substitution:** Reactions of carboxylic acids, Chemistry of acid halides,Chemistry of acid anhydrides, Chemistry of esters, Chemistry of amides. Carbonyl Alpha-Substitution Reactions: Keto–Enol tautomerism, Reactivity of enols, Alpha Halogenation of Aldehydes and Ketones, Acidity of Alpha hydrogen atoms: Enolate ion formation, Acidities of organic compounds. Carbonyl Condensation Reactions: Condensations of aldehydes and ketones: The Aldol reaction, Biological carbonyl condensation reactions. **Amines:** Properties and sources of amines, Basicity of amines, Basicity of substituted arylamines, Synthesis of amines, Reactions of arylamines,

Textbook:

John McMurry, Organic Chemistry, 8th edition, International Edition, Brooks cole , 2011

References:

1. Paula yurkanis Bruice Organic Chemistry, 2ed edition, PRENTICE HALL, Upper saddle River New Jersey, 1998.
2. Morrison, R. T.; Boyd, R. N, Organic Chemistry, 6th edition, Prentice Hall of India (1996).