



Heterocyclic Chemistry

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
CHM	325	Heterocyclic Chemistry	3	2	0	2	CHM 224

Objectives:

A major objective of the present course of lectures is the rationalization of the reactivity of heteroaromatic compounds. Will have some knowledge of methods to prepare some heterocyclic compounds with Five and Six members, fused rings and heterocyclic compounds two or more heteroatom's. Improving the students' knowledge of the methods of preparation followed by the Reaction Mechanism. Application for the Synthesis and Design of some biologically active compounds derived from heterocyclic compounds.

Syllabus:

Structure of heterocyclics; Introduction; Relationship of heterocyclic and carbocyclic aromatic compounds.; Systematic nomenclature. The relation between benzene ring and the heterocyclic rings

Heterocycles with three members with one heteroatom.

Structure of Five-membered Rings with One Heteroatom; Reactivity of five-membered rings with one heteroatom; Electrophilic attack; Nucleophilic attack; Nucleophilic attack at nitrogen heteroatom; Nucleophilic attack at hydrogen attached to ring carbon or ring nitrogen.; Benzoderivatives of five-membered heterocycles with one heteroatom.

Structure of five-membered rings with two or more heteroatoms; Azoles with heteroatoms in the 1,2-positions; Azoles with heteroatoms in the 1,3-positions; Reactivity of five-membered rings with two or more heteroatoms.

Structure of six-membered rings with one heteroatom; Reactivity of six-membered rings with one heteroatom (Pyran, Thiopyran, Pyridine); Electrophilic attack; Nucleophilic attack; Nucleophilic attack at nitrogen heteroatom; Nucleophilic attack at hydrogen attached to ring carbon or ring nitrogen.; Benzoderivatives of six-membered heterocycles with one heteroatom.

Heterocycles with Six-members with two or more heteroatoms. Structure and reactivity of 1,2- and 1,4- and 1,3 diazines ; triazines, tetrazines, oxadiazines and oxathiazines.

Biologically important heterocycles.

Textbook:

John A. Joule, Keith Mills.; Heterocyclic Chemistry, 5th Edition , April 2010, ©2010, Wiley-Blackwell, ISBN: 978-1-4051-3300-5, 718 pages

References:

1. Gilchrist, T. L. Heterocyclic chemistry; 3rd ed.; Addison Wesley Longman: Edinburgh Gate, 1997.
2. Joule, J. A.; Mills, K.; Heterocyclic chemistry; 4th ed.; Blackwell Science: Oxford, 2000.

