

Inver Hills Community College

CHEM 2061: Organic Chemistry I

A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: 4

Lab Hours/Week: 4

OJT Hours/Week: *.*

Prerequisites:

This course requires the following prerequisite
CHEM 1062 - Principles of Chemistry II

Corequisites: None

MnTC Goals: None

Is intended for students pursuing a major in chemistry, biology, chemical or material science engineering, pharmacy, veterinary medicine and a variety of medical fields. The course includes a review of basic chemical concepts applied to organic compounds, the role of covalent bonding in organic compounds, functional groups, resonance, structural isomerism, an overview of organic nomenclature, chemical properties of alkanes, stereochemistry, substitution and elimination reactions, free-radical reactions, preparation and reactions of alcohols, ethers and epoxides. The lab component of the course provides the student experience with lab techniques applied to organic chemistry. Prereq: CHEM 1062.

B. COURSE EFFECTIVE DATES: 01/01/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Free-radical reactions: 12%
2. Introduction to MO theory, orbital hybridization of carbon, nitrogen and oxygen, functional groups, pi-bond conjugation and resonance: 10%
3. Nomenclature, synthesis and reactions of alcohols, retrosynthesis using reactions of alkanes and alcohols: 16%
4. Nomenclature, synthesis and reactions of ethers and epoxides: 12%
5. Review of basic chemical concepts applied to carbon compounds
6. Stereochemistry: Geometric isomers, conformational analysis, chirality and resulting stereoisomers and stereochemical nomenclature: 17%
7. Structural isomers, survey of organic nomenclature, and properties and reactions of alkanes: 10%
8. Substitution and elimination reactions of alkyl halides, S_N1 , S_N2 , $E1$ and $E2$ reaction mechanisms: 14%

D. LEARNING OUTCOMES (General)

1. Apply basic chemical concepts to organic compounds in order to explain their physical and chemical properties
2. Recognize organic compounds by their functional groups
3. Write structural and condensed formulas for organic compounds
4. Name representative compounds belonging to the different families of organic compounds using the IUPAC system
5. Recognize structural and stereochemical isomerism in organic compounds and name such compounds appropriately
6. Recognize S_N1 , S_N2 , $E1$, $E2$ and free-radical reaction mechanisms in organic reactions
7. Illustrate each type of organic reaction mechanism with specific organic chemical reactions
8. Use preparations and reactions of alkyl halides, alcohols, ethers and epoxides to write out possible laboratory syntheses for given compounds
9. Students will recognize characteristics of hazardous wastes and describe safe handling, storage, and disposal appropriate for this course

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted