

North Hennepin Community College

CHEM 2061: Organic Chemistry I

A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: 0

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:

This course requires the following prerequisite

CHEM 1062 - Principles of Chemistry II (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: None

This course is a study of the covalent molecules associated with carbon, emphasizing the mechanism of the reactions and the stereochemistry of aliphatic, alicyclic, and olefinic molecules. Functional groups that will be studied include the saturated and unsaturated hydrocarbons, alcohols, ethers and halides. The laboratory portion of the course includes a thorough study of the basic techniques for the isolation and purification of molecules isolated from natural products and from reaction mixtures. (4 hours lecture, 4 hours lab) Prerequisite: Chem 1062

B. COURSE EFFECTIVE DATES: 07/17/1997 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Content covered will include: Review of Covalent Bonding and Acid-Base Theories; Structure, Stereochemistry, Nomenclature, Synthesis and Reactions of Alkanes, Alkenes, Alkynes, Alcohols, Ethers and Alkyl Halides. IR Spectroscopy and its relevance in the study of structure. The mechanistic and stereochemical approach to the study of reactions.

D. LEARNING OUTCOMES (General)

1. Predict the mechanism of a familiar reaction (course sequence goal 1) (NHCC Core Ability Critical Thinking, comps. a, c; NHCC ELOs 1, 2)
2. Correlate the mechanism with the identity and stereochemistry of the predicted product (course sequence goal 1; NHCC ELOs 1, 2)
3. Correlate molecular structure with properties in lecture and lab (course sequence goal 1; NHCC ELOs 1, 2, 4)
4. Deduce the IUPAC name of a provided structure of alkanes, alkenes, alkynes, aromatic compounds, alkyl halides, alcohols, amines, phenols, ethers, aldehydes, ketones, carboxylic acids, esters and amides and their derivatives (course sequence goal 2; NHCC ELOs 1, 2)
5. Construct a structure when a name is provided (course sequence goal 2; NHCC ELOs 1, 2, 4)
6. Recognize enantiomers, diastereomers, epimers and anomers (course sequence goal 3; NHCC ELOs 1, 2)
7. Identify R, S, E, Z isomers (course sequence goal 3; NHCC ELOs 1, 2)
8. Distinguish preferred conformations based on regiochemical and stereochemical preferences and the steric requirements of various substituents (course sequence goal 3; NHCC ELOs 1, 2)
9. Categorize reactions by type (course sequence goal 4; NHCC ELOs 1, 2)
10. Predict the structural changes in the reactions (course sequence goal 4; NHCC ELOs 1, 2)
11. Predict the regiochemistry and stereochemistry expected in the product (course sequence goal 4; NHCC ELOs 1, 2)
12. Identify reagents and any special conditions required to conduct a reaction, when reactants and products are known (course sequence goal 4; NHCC ELOs 1, 2)
13. Understand the principles on which an analytical technique is based (course sequence goal 5; NHCC ELOs 1, 2)
14. Recognize important features of the techniques (course sequence goal 5; NHCC ELOs 1, 2)
15. Correlate information obtained with structure (course sequence goal 5; NHCC ELOs 1, 2)
16. Analyze data and make accurate conclusions from data (course sequence goal 5; NHCC ELOs 1, 2)
17. Recognize the relation between structure and function of biomolecules (course sequence goal 6; NHCC ELOs 1, 2, 4)
18. Correlate properties and applications (course sequence goal 6) (NHCC Core Ability Critical Thinking, comps. a, c; NHCC ELOs 1, 2, 4)

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

1. Knowledge of Human Cultures and the Physical and Natural World--Through study in the sciences, mathematics, social sciences, humanities, histories, languages, the arts, technology and professions.
2. Intellectual and Practical Skills--Including: Inquiry and analysis; Critical and creative thinking; Written and oral communication; Quantitative literacy; Information literacy; Teamwork and problem solving.
4. Integrative and Applied Learning--Including: Synthesis and advanced accomplishment across general education, liberal studies, specialized studies and activities in the broader campus community.