

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: CHM 241

Credits: 3

Course Title: Organic Chemistry I

Course Description: Introduces fundamental chemistry of carbon compounds, including structures, physical and chemical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Prerequisite: CHM 112 or equivalent. Co-requisite: CHM 245. Lecture 3 hours per week.

General Course Purpose: Designed for students transferring to a four-year college or university in a science curriculum. Requires a strong background in mathematics.

Course Prerequisites and Co-requisites:

Prerequisite: CHM 112 or equivalent

Co-requisite: CHM 245

Course Objectives:

Upon completing the course, the student will be able to

- a. Describe the types of bonding;
- b. Draw the structure(s) showing the proper geometry;
- c. Indicate the correct stereochemistry using the proper notation and/or stereochemical formulas;
- d. Describe the mechanism for reactions of the functional group(s) using equations with the appropriate (condensed or expanded) structural formulas;
- e. Recognize the influence of both kinetic and thermodynamic control of a reaction mechanism;
- f. Show the synthesis of a given compound with appropriate chemical equations; and
- g. Identify a compound using spectroscopic data gained from the following instruments:
 - Ultraviolet/visible Spectroscopy (UV/Vis)
 - Infrared Spectroscopy (IR,FTIR)
 - Nuclear Magnetic Resonance Spectroscopy (NMR)
 - Mass Spectrometry (MS)

Major Topics to Be Included:

- a. Bonding and structure
- b. Alcohols and alkyl halides
- c. Structure and stability of alkenes
- d. Stereochemistry
- e. Nucleophilic substitution reactions
- f. Conjugation in dienes and allylic systems
- g. Spectroscopy: UV/Vis, IR, and NMR

Effective Date of Course Content Summary: February 16, 2009