

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: CHM 241

Credits: 3

Course Title: Organic Chemistry I

Course Description (including lecture hours, lab hours, total contacts)

Introduces fundamental chemistry of carbon compounds, including structures, physical and chemical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. 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/Corequisites (*Entry-level competencies **required** for enrollment*)

Prerequisite: CHM 112 or equivalent. Co-requisite: CHM 245.

Course Objectives (Each item should complete the following sentence.)

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.
- 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 (Month, Date Year): 2/16/09