

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

Course Prefix and Number: CHM 242

Credits: 3

Course Title: Organic Chemistry II

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 241. Co-requisite: CHM 246.

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. Organometallic compounds
- b. Alcohols, Ethers, and epoxides
- c. Aldehydes, ketones, and nucleophilic addition to the carbonyl group
- d. Enols, enolates, and enamines
- f. Carboxylic acids
- g. Acyl transfer reactions
- h. Ester enolates, Alkylamines, Arylamines
- k. Aryl halides, Phenols, Carbohydrates

Effective Date of Course Content Summary (Month, Date Year): 2/16/09