

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

**Course Prefix and Number:** CHM 245

**Credits:** 2

**Course Title:** Organic Chemistry Laboratory I

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

Introduces fundamental chemistry of carbon compounds, structures, and properties. Emphasizes reaction mechanisms and synthesis. Includes qualitative organic analysis. Laboratory 6 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*)

Co-requisite: CHM 241.

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

Upon completing the course, the student will be able to:

- a. Describe the mechanism for reactions of the functional group(s) using equations with the appropriate (condensed or expanded) structural formulas.
- b. Recognize the influence of both kinetic and thermodynamic control of a reaction mechanism.
- c. Show the synthesis of a given compound with appropriate chemical equations.
- d. 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):** 02/16/09