

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

**Course Prefix and Number:** CHM 245

**Credits:** 2

**Course Title:** Organic Chemistry Laboratory I

**Course Description:** Introduces fundamental chemistry of carbon compounds, structures, and properties. Emphasizes reaction mechanisms and synthesis. Includes qualitative organic analysis. Co-requisite: CHM 241. 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 and Co-requisites:**

**Co-requisite:** CHM 241

**Course Objectives:**

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; and
- 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:** February 16, 2009