

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

Course Prefix and Number: CHM 111

Credits: 4

Course Title: College Chemistry I

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

Explores the fundamental laws, theories and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

Designed primarily for science and engineering majors.

Course Prerequisites/Corequisites (*Entry-level competencies **required** for enrollment*)

Corequisites: MTH 163, MTH 166 or MTH 173.

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

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

- a. Use stoichiometric concepts to solve problems and recognize differences in composition of compounds and chemical reactions.
- b. Understand the current descriptions of atomic and molecular structure and periodicity, and use that understanding to solve problems involving (1) electron configuration, (2) molecular composition and geometry, and (3) molecular and atomic properties.
- c. Demonstrate an understanding through problems solving and laboratory work of (1) rates and rate laws of chemical reactions, and (2) homogeneous and heterogeneous equilibria in chemical systems.
- d. Balance oxidation/reduction equations.

Major Topics to be Included

- a. Introduction and basic concepts
- b. Atoms, molecules, and ions
- c. Stoichiometry
- d. Thermochemistry
- e. Introduction to chemical bonding
- f. Properties of liquids and solids, gases and phase changes
- g. Solutions-properties and measures of concentration
- h. Chemical equilibrium (general)

Effective Date of Course Content Summary (Month, Date Year): 02/16/09