



Alabama Community College System

CHM 111 College Chemistry I

I. CHM 111 College Chemistry I—4 Semester Hours

II. Course Description

This is the first course in a two-semester sequence designed for the science or engineering major who is expected to have a strong background in mathematics. Topics in this course include measurement, nomenclature, stoichiometry, atomic structure, equations and reactions, basic concepts of thermochemistry, chemical and physical properties, bonding, molecular structure, gas laws, kinetic molecular theory, condensed matter, and some descriptive chemistry topics. Laboratory is required.

III. Prerequisite

PREREQUISITE or CO-REQUISITE: MTH 112 (Precalculus Algebra) or equivalent math placement score.

IV. Textbook

Due to the varied selection of quality college-level textbooks, each college will select the textbook needed to meet the requirements of this course.

V. Course Learning Outcomes

By the end of the course, students will be able to:

1. demonstrate knowledge of the fundamental concepts of atomic structure, chemical bonding, intermolecular forces, chemical periodicity, and properties of the states of matter;
2. identify different classes of chemical reactions and predict products of basic reactions;
3. write the correct chemical formula from a name and vice versa;
4. describe the basic principles of thermochemistry;
5. predict, describe, and explain the behavior of gases using kinetic molecular theory;
6. solve problems related to measurement, stoichiometry, thermochemistry, gases, and solutions, using dimensional analysis and appropriate equations;
7. demonstrate proper lab techniques and safety in the performance of common experiments in chemistry; and

8. apply scientific reasoning to interpret experimental data.

VI. Course Outline of Topics

Lecture Topics:

1. Introduction to the fundamental concepts of chemistry
2. Measurements, units, and calculations
3. Atoms, molecules, and ions
4. Electronic structure of atoms and periodicity
5. Nomenclature
6. Chemical bonding and molecular geometry
7. Other theories of bonding
8. Stoichiometry
9. Gases
10. Thermochemistry
11. Intermolecular forces
12. Solutions and concentrations
13. Liquids and solids

Lab Topics:

1. Graphical analysis of data
2. Measurements
3. Identification of an unknown compound
4. Chemical and physical changes
5. VSEPR and molecular models
6. Gravimetric analysis
7. Stoichiometry including percent yield
8. Calorimetry
9. Titration
10. Gas laws
11. Atomic spectra

VII. Evaluation and Assessment

Grades will be given based upon A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

VIII. Attendance

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. Statement on Discrimination/Harassment

It is the official policy of the Alabama Community College System and entities under its control, including all Colleges, that no person shall be discriminated against on the basis of any impermissible criterion or characteristic, including, without limitation, race, color, national origin, religion, marital status, disability, sex, age, or any other protected class as defined by federal and state law. (ACCS Policies 601.02 and 800.00)

X. Americans with Disabilities

The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College.