

Course Syllabus

Department: Science & Technology

Date: May 2012

I. Course Prefix and Number: CHM 110

Course Name: Fundamentals of Chemistry

Credit Hours and Contact Hours: 4 credit hours and 5 contact hours

Catalog Description including pre- and co-requisites:

An intensive study of the fundamentals of chemical principles with an emphasis on developing the problem solving and study skills required to succeed in general chemistry (CHM 121). Topics include a review of basic math, dimensional analysis, formulas and nomenclature, chemical equations and reactions, stoichiometry, atomic and molecular structure, solution concentrations, and acids and bases. This course is designed to prepare students majoring in the sciences for the general chemistry sequence. Prior study of chemistry is not assumed.

Prerequisites – Successful completion of all required remedial courses. Placement into Math Level 2 or higher. Co-requisites MAT 145.

II. Course Outcomes and Objectives

Student Learning Outcomes:

Upon completion of this course, the student will be able to:

- Demonstrate an understanding of basic principles of chemistry and how they relate to everyday experiences
- Demonstrate an understanding of the chemical environment and the role chemistry play in the natural and the synthetic world
- Apply methods of scientific inquiry
- Demonstrate problem solving and critical thinking skills
- Apply problem solving techniques to real-world problems

Relationship to Academic Programs and Curriculum:

This course is designed as a first-contact preparatory course for the two-semester general chemistry student. It is not designed, but may be helpful, for the allied health or nursing student. Nor is it designed to serve as a contemporary chemistry and society course for the non-science student.

College Learning Outcomes Addressed by the Course:

- | | |
|--|--|
| <input type="checkbox"/> writing | <input type="checkbox"/> computer literacy |
| <input type="checkbox"/> oral communications | <input type="checkbox"/> ethics/values |
| <input type="checkbox"/> reading | <input type="checkbox"/> citizenship |
| X mathematics | <input type="checkbox"/> global concerns |
| X critical thinking | <input type="checkbox"/> information resources |

III. Instructional Materials and Methods

Types of Course Materials:

A standard introductory one-semester chemistry textbook, and a laboratory manual with basic experimental techniques, are required.

Methods of Instruction (e.g. Lecture, Lab, Seminar ...):

Three hours of lecture, complemented with group learning activities such as case studies and guided learning activities, plus a two-hour laboratory

IV. Assessment Measures (Summarize how the college and student learning outcomes will be assessed):

Student learning outcomes will be assessed using a variety of assessment measures:

1. Unit exams, quizzes, and a comprehensive final will assess student knowledge of basic principles of chemistry and how they relate to everyday experiences.
2. Class assignments and active learning activities such as case studies and guided learning, will assess mastery of critical thinking and mathematics to solve real world problems.

V. General Outline of Topics Covered:

- A. Matter and Energy
- B. States and Classification of Matter
- C. Physical and Chemical Properties
- D. Matter and Measurement
- E. Review of Basic Math and Dimensional Analysis
- F. Atomic Theory
- G. Problem Solving and Stoichiometry
- H. Simple Quantitative Calculations with Chemical Reactions
- I. The Periodic Table and the Periodic Properties of Elements
- J. Basic Nomenclature of Molecules and Molecular Compounds
- K. Ions and Ionic Compounds
- L. Acids, Bases and Classification of Chemical Reactions