CHEM 1210

Division: Natural Science and Mathematics
Department: Chemistry
Course: CHEM 1210
Title: Principles of Chemistry I
Catalog Description:

This course is designed to teach chemical theory and principles as they are applied to present day chemistry. Topics covered in this course include atomic theory, gas laws, thermochemistry, molecular bonding, reaction chemistry, etc. This course should be taken by students in programs such as chemistry, physics, geology, biology, engineering, pre-medicial areas who will take additional chemistry courses.

General Education Requirements: Physical Science
Semesters Offered: Fall, Spring
Credit/Time Requirement: Credit: 4; Lecture: 4; Lab: 0
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Prerequisites: High school chemistry or college chemistry course, and Math 1010. A Chemistry pretest is also given to determine if those registering for the class have adequate preparation to allow successful completion of the course.

Corequisites: Chem 1215, and Math 1050.

Justification:

This is a standard freshman chemistry course that is required for majors in most Natural Science, Engineering, or Premedical areas. This course prepares engineers to understand basic chemical processes from water purification, to the curing of cement. Other medical and science related fields use chemistry as a background for understanding courses in biochemistry, biology, geology or physics. The basic problem solving skills learned in this course are valuable in many areas. This course is called Chem 1210 by all state schools in Utah. The course is transferable to every major school in Utah and is accepted in other states as well.

Student Learning Outcomes:

At the conclusion of this course a student should understand basic chemical processes, the mole concept, and have sufficient knowledge of chemistry to solve problems related to the areas covered in this course.

Content:

Unit I Chemistry: The study of Change

Unit II Atoms, Molecules, and Ions Atomic Theory

Unit III Mass Relationships in Chemical Reactions

Unit IV Reactions in Aqueous Solutions

Unit V Gases Measurements on gases

Unit VI Thermochemistry

Unit VII Electronic Structure

Unit VIII Periodic Relationships Among the Elements

Unit IX Covalent Bonding I: Basic Concepts

Unit X Chemical Bonding II: Molecular Geometry and Hybridization of Atomic Orbitals

Unit XI Intermolecular Forces and Liquids and Solids

General Education Outcomes:

6) Apply computational skills to a variety of contexts.
Most problems in Chem 1210 are "story problems" that require not only an understanding of the step-by-step process required to solve the problem, but also an overall understanding of chemical principles being applied. Each chapter presents new concepts that require different computational skills to solve problems.

7) Apply scientific reasoning to a variety of contexts.
Students are expected to apply scientific reasoning throughout the course. This reasoning not only allows them to solve problems, but also to learn, remember and interrelate chemical principles encountered in this course, in future courses, and in life.

Key Performance Indicators:
Students will be assessed on a weekly basis through quizzes and tests. Homework will be assigned and graded each day to give students the opportunity to check their progress. A portion of each test is made up of problems that must be setup and solved or questions that can be answered in an essay format; another portion of each test consists of multiple choice questions.

Representative Text and/or Supplies:
Chang, Raymond. *Chemistry,* Seventh Edition or current edition. McGraw-Hill Companies, Inc., New York, NY Masterton, William L., and Hurley, Cecile N. *Chemistry Principles and Reactions,* Fourth Edition or current edition. Saunders College Publishing, Philadelphia, PA

Optimum Class Size: 30
Maximum Class Size: 48

Signatures:

I hereby submit this course syllabus:

_____

, ,

I hereby find this course consistent with the goals and resources of the Chemistry Department:

_____

Mark Wathen, PhD, Assistant Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

_____

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

_____

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

_____

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)