



CHEM 1220

Division: Natural Science and Mathematics

Department: Chemistry

Course: CHEM 1220

Title: Principles of Chemistry II

Catalog Description:

This course is a continuation of CHEM 1210. The principles of equilibrium, kinetics, and solution chemistry are applied to present-day chemistry. This course is for students in the natural sciences such as Chemistry, Physics, Biology, Engineering, and Pre-medical areas who will take additional chemistry courses.

General Education Requirements: Physical Science

Semesters Offered: TBA

Credit/Time Requirement: Credit: 4; Lecture: 4; Lab: 0

Clock/Hour Requirements: 0

Offered for Non-Credit: No

Prerequisites: a grade of C- or higher in CHEM 1210

Corequisites: CHEM 1225

Justification:

This is a standard freshman chemistry course that is required for majors in any Natural Science or Premedical area. 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 1220 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:

The student will understand basic chemical processes, equilibrium, kinetics, and solution chemistry and have sufficient knowledge of chemistry to solve problems related to the content areas covered in this course.

Content:

Students will study the following:

Chemical Kinetics--Rate of Reaction

Chemical Equilibrium

Acids and Bases

Acid-Base and Solubility Equilibria

Transition Metal Chemistry and Coordination Compounds

Entropy, Free Energy, and Equilibrium

Electrochemistry

Qualitative Analysis

Nuclear Reactions

Organic Chemistry

General Education Outcomes:

6) Apply computational skills to a variety of contexts.

Most problems in CHEM 1220 are "story problems" that require students to not only understand the step-by-step process required to solve the problem, but also understand the overall chemical principles being applied. Each chapter presents new concepts that require a variety of computational skills to solve problems. Computational skills will be assessed from homework, quizzes, and exams.

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 apply chemical principles encountered in this course, in future courses, and in life. Scientific reasoning ability will be assessed from homework, quizzes, and exams.

Key Performance Indicators:

Students will be assessed on a week-by-week basis through in-class quizzes and tests. Homework will be assigned and graded regularly to give students the opportunity to check their own 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. Final grades will be determined using the following approximate percentages: 70% exams, 15% quizzes, and 15% homework.

Representative Text and/or Supplies:

McMurray, John E. and Fay, Robert C. *Chemistry*, current edition. Pearson Prentice Hall, Inc., Upper Saddle River, NJ.

Optimum Class Size: 30

Maximum Class Size: 48

Signatures:

I hereby submit this course syllabus:

Dan Black, EdD, Associate Professor

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)