CHEM 1110

Division: Natural Science and Mathematics
Department: Chemistry
Course: CHEM 1110
Title: Elementary Chemistry
Catalog Description:

This is the first semester course of a General, Organic, and Biochemistry sequence. It covers basic general chemistry and an introduction to organic chemistry. It includes general chemistry topics as well as organic chemistry nomenclature, functional group overview and the study of alkenes, alcohols, and aromatics. Majors typically taking the course include home economics, agricultural sciences, physical therapy, nursing, and other related health sciences.

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: MATH 1010 or equivalent

Corequisites: CHEM 1115

Justification:

This course is offered by Chemistry departments at most institutions in the state and will transfer to all of them. It is a service course for allied health sciences, forestry, agriculture, etc. as required by their major departments. This course may also fulfill part of the Physical Science General Education Option.

Student Learning Outcomes:

Students will be able to solve problems in general chemistry involving application of the scientific method, chemical stoichiometry, gas laws, solutions chemistry including acid-base chemistry and equilibrium. Students will know basic organic functional groups, organic nomenclature and basic reactions involving alkanes, unsaturated hydrocarbons, and aromatics. Students will gain an appreciation for usefulness of critical thinking and problem solving techniques. They will be able to see the utility of organic synthesis.

Content:

Chemistry 1110 is an introduction to General Chemistry and an introduction to Organic Chemistry that includes the following major topics: Matter and Measurement, Atomic Theory, Chemical Bonds, Chemical Reactions, Gases, Liquids, and Solids, Solutions and Colloids, Reaction Rates and Equilibrium, Acids and Bases, Nuclear Chemistry, Organic Chemistry (alkanes), Alkenes, Alkynes, and Aromatics.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.
Students will be able to solve problems using various techniques including: "unit cancellation"; this method will be emphasized throughout the course conversions such as lbs/hour to kg/min or grams Mg to liters of hydrogen gas. Students will be taught methods in rounding, use of scientific notation, balanced equations, stoichiometry problems, % yield, gas laws, solutions, etc.

7) Apply scientific reasoning to a variety of contexts.
Students will be able to approach problems logically and come to a solution based on chemical principles. This will include their ability to apply nomenclature rules to compounds with several functional groups, to predict major and minor products of organic reactions, and to solve multi-step organic synthesis problems.

Key Performance Indicators:

Students will be assessed on a weekly basis through in-class quizzes and tests. Homework will be assigned on a regular basis to give students the opportunity to check their own progress.
GRADING POLICIES:
TESTS (about 4) 65 % (final counts as two)
QUIZZES (about 10) 20 %
HOMEWORK 15 % (almost daily)

Representative Text and/or Supplies:
Bettelheim & March, *General, Organic, and Biochemistry*, 7th Edition, Thomson Publishing, Philadelphia, Pa., 2004 (or current edition)

Optimum Class Size: 30
Maximum Class Size: 46

Signatures:

I hereby submit this course syllabus:

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

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Mark Wathen, PhD, Assistant Professor, Chair

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

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Dan Black, EdD, Associate Professor, Dean

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

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

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)