Chemistry

See also Physics

CHEM 114 SURVEY OF CHEMISTRY AND PHYSICS

Equivalent to PHYS 114. A conceptual survey of physical science (physics and chemistry) intended for non-science majors at the General Education level. A general discussion of the scientific method and techniques are followed by physics, chemistry, and integrated topics. The laboratory portion covers a hands-on exploration of phenomena discussed in lecture. The physics component of the course discusses motion, force, energy, electricity and magnetism, waves and light. The chemistry component of the course focuses on chemicals and reactions common in everyday life. Concepts relating to the nature and interactions of atoms, ions, and molecules are presented. Students also learn to use and evaluate information presented on product labels, in advertisements, and online. *Letter Grade Only. Degree Credit.*

Units: 4

Hours/semester: 48-54 Lecture; 48-54 Lab; 96-108 Homework

Prerequisites: Successful completion of Elementary Algebra or equivalent, or placement by other measures as applicable.

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3), UC* (IGETC Area 5A*)

C-ID: CHEM 140

CHEM 192 ELEMENTARY CHEMISTRY

Comprehensive introductory chemistry course covering basic concepts, theories and laws with emphasis on reasoning and problem solving skills. Topics include but are not limited to chemical nomenclature, stoichiometry, electron configuration, atomic orbitals, molecular geometry and bonding. The laboratory component of this course introduces students to both qualitative techniques and quantitative techniques appropriate for data collection, manipulation and analysis of a variety of chemical systems. *Letter Grade Only. Degree Credit.*

Units: 4

Hours/semester: 48-54 Lecture; 48-54 Lab; 96-108 Homework

Prerequisites: Successful completion of Elementary Algebra or equivalent, or placement by other measures as applicable.

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3), UC* (IGETC Area 5A*, 5C)

C-ID: CHEM 101

CHEM 210 GENERAL CHEMISTRY I

This course is the first half of a two-semester sequence in general chemistry intended for students pursuing majors in physical sciences, biological sciences and engineering. The topics include atomic theory, stoichiometry, chemical bonding, thermochemistry, periodicity, molecular geometry, gas laws, solution stoichiometry, intermolecular forces and selected topics covering redox and acid-base reactions. The laboratory program includes gravimetric, colorimetric, and selected volumetric methods of analysis. Students are introduced to spreadsheet and graphical analysis of laboratory data and molecular modeling, and perform a variety of computer-interfaced experiments. *Letter Grade Only. Degree Credit.*

Units: 5

Hours/semester: 48-54 Lecture; 96-108 Lab; 96-108 Homework

Prerequisites: Successful completion of Intermediate Algebra or equivalent, or placement by other measures as applicable.

Recommended: Any Preparation for Chemistry course or other measures that demonstrate proficiency in general science and preparation for study of college chemistry. This includes completion of high school chemistry with a grade of C or better.

AA/AS Degree Requirements: Area B1, B3; Math Competency

Transfer Credit: CSU (CSU GE Area B1, B3), UC (IGETC Area 5A, 5C)

C-ID: CHEM 110; CHEM 120S (both CHEM 210 & 220 must be taken)

CHEM 220 GENERAL CHEMISTRY II

This course is the continuation of CHEM 210 and is intended for students pursuing majors in physical sciences, biological sciences and engineering. The topics discussed include properties of solutions, kinetics, equilibrium, acid-base equilibria, thermodynamics, spontaneity, electrochemistry, nuclear reactions, and the chemistry of complex ions. The laboratory program extends the use of spreadsheet, graphical analysis and computer interfaced experimentation in acid-base titrations, rates of reactions, electrochemistry and volumetric analysis. A brief qualitative analysis scheme is also carried out in the laboratory program. *Letter Grade Only. Degree Credit.*

Units: 5

Hours/semester: 48-54 Lecture; 96-108 Lab; 96-108 Homework

Prerequisites: CHEM 210 or equivalent

Recommended: Eligibility for ENGL 100.

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3), UC (IGETC Area 5A, 5C)

C-ID: CHEM 120S (both CHEM 210 & 220 must be taken)

CHEM 231 ORGANIC CHEMISTRY I

Introduction to the chemistry of hydrocarbons with emphasis on structure and reactivity of alkanes, alkenes, alkynes, alkyl halides, and conjugated systems. Mechanisms, stereochemistry and spectroscopy are an integral part of the course. Basic synthesis, separation, purification and spectroscopic techniques are introduced in the laboratory. Designed as the first semester of a one-year organic chemistry sequence. *Letter Grade Only. Degree Credit.*

Units: 5

Hours/semester: 48-54 Lecture; 96-108 Lab; 96-108 Homework

Prerequisites: CHEM 220

Recommended: Eligibility for ENGL 100.

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3), UC (IGETC Area 5A, 5C)

C-ID: CHEM 150; CHEM 160S (both CHEM 231 + 232)

CHEM 232 ORGANIC CHEMISTRY II

This course is a continuation of CHEM 231. It introduces the chemistry of aromatic compounds, aldehydes, ketones, carboxylic acids, carbohydrates, lipids, amino acids and proteins with emphasis on synthesis and reaction mechanisms. Laboratory work emphasizes techniques for the synthesis, purification and identification of organic compounds by spectroscopic methods. *Letter Grade Only. Degree Credit.*

Units: 5

Hours/semester: 48-54 Lecture; 96-108 Lab; 96-108 Homework

Prerequisites: CHEM 231

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3), UC (IGETC Area 5A, 5C)

C-ID: CHEM 160S (both CHEM 231 + 232)

CHEM 410 CHEMISTRY FOR HEALTH SCIENCES

A survey of basic concepts in general, organic and biological chemistry relevant to the allied health science fields including nursing, radiological technology, respiratory therapy, etc. *Letter Grade Only. Degree Credit.*

Units: 4

Hours/semester: 48-54 Lecture; 48-54 Lab; 96-108 Homework

Prerequisites: Successful completion of Elementary Algebra or equivalent, or placement by other measures as applicable.

AA/AS Degree Requirements: Area B1, B3

Transfer Credit: CSU (CSU GE Area B1, B3)

CHEM 695 INDEPENDENT STUDY

Designed for students who are interested in furthering their knowledge via self-paced, individualized instruction provided in selected areas or directed study to be arranged with instructor and approved by the division dean using the Independent Study Form. Varying modes of instruction can be used -- laboratory, research, skill development, etc. For each unit earned, students are required to devote three hours per week throughout the semester. Students may take only one Independent Study course within a given discipline. *Grade Option (Letter Grade or Pass/No Pass). Degree Credit.*

Units: 0.5 - 3

Hours/semester: 24-162 Lab

Transfer Credit: CSU