

CHEMISTRY (CHEM)

CHEM-102

Introduction to General, Organic and Biological Chemistry 5 UNITS

Prerequisite: Appropriate mathematics placement.

4.0 hours lecture, 3.0 hours laboratory

A one-semester course covering the basic principles of general, organic and biochemistry as needed to understand the biochemistry, physiology and pharmacology of the human body. This course is intended for students planning to transfer to a California State University nursing program. Students with a grade of "C" or higher in Chemistry 115 and 116 are not eligible for this class. (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A)

CHEM-110

Environmental Chemistry 3 UNITS

3.0 hours lecture

A course in chemistry designed for the nonscience student who wishes to discover how chemistry is an intricate part of our everyday life. Emphasis will be placed on basic chemical principles and practices, fundamental concepts, and modern implications of chemistry. Students will also become acquainted with environmental applications of topics covered, including the study of the environmental issues such as ozone depletions, global warming, air and water pollution, and radioactivity. Demonstrations and hands-on in-class experiments involving student participation take the place of a laboratory. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

CHEM-113

Forensic Chemistry 4 UNITS

Prerequisite: Appropriate mathematics placement.

3.0 hours lecture, 3.0 hours laboratory

Elementary principles of inorganic and general chemistry with application to the field of criminal justice. Students will learn basic chemical terminology, problem solving techniques and chemical explanations of our environment. Emphasis will be placed on forensic applications of topics covered, including the study of physical evidence such as hair, fibers, glass, fingerprints, and paint. Organic and inorganic techniques for analyzing evidence will be studied in lecture and practiced in lab. Previous chemistry background is helpful, but not required. This course is recommended for students needing a one semester general chemistry laboratory course. This course does not satisfy the prerequisite for Chemistry 141. Students will not receive credit toward graduation for more than one of the following courses: Chemistry 113, Chemistry 115, and Chemistry 120. (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-115

Fundamentals of Chemistry 4 UNITS

Prerequisite: Appropriate mathematics placement.

3.0 hours lecture, 3.0 hours laboratory

Elementary principles of inorganic and general chemistry with an overview of organic and biochemistry. Basic chemical terminology, problem solving techniques and chemical explanations of our environment will be studied. Chemical concepts will be explained through common applications such as health science and forensic science. Previous chemistry background is helpful, but not required. This course is recommended for students needing a one semester general chemistry laboratory course. This course does not satisfy the prerequisite for Chemistry 141. Students will not receive credit toward graduation for more than one of the following courses: Chemistry 113, Chemistry 115 and Chemistry 120. (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-116

Introductory Organic and Biochemistry 4 UNITS

Prerequisite: "C" grade or higher or "Pass" in CHEM 115 or equivalent.

3.0 hours lecture, 3.0 hours laboratory

This course introduces the study of carbon compounds with emphasis on their structure, properties, and reactivity. Introduction to the structure of the major classes of biomolecules- carbohydrates, lipids, and proteins- and their relationship to the major classes of organic compounds. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

CHEM-117

Introductory Biochemistry 3 UNITS

Prerequisite: "C" grade or higher or "Pass" in CHEM 116 or CHEM 102 or CHEM 241 or equivalent.

3.0 hours lecture

This course is an introduction to the chemistry of biochemical reactions and biochemical molecules. Topics include: acid/base chemistry, thermodynamics, cell biology, amino acids, and proteins, enzymes, lipids, membranes and transport, carbohydrates, metabolism, nucleic acids, and information transfer. This course is designed for students majoring in nutrition, allied health, nursing, and the chemical or life sciences. (CSU/UC) (AA/AS-B2, CSU-B2, IGETC-5B)

CHEM-120

Preparation for General Chemistry 4 UNITS

Prerequisite: Appropriate mathematics placement or intermediate algebra.

3.0 hours lecture, 3.0 hours laboratory

A beginning general chemistry course for students with little or no background in chemistry. This course will prepare students for a full year general chemistry course. This course will be an intensive study in the areas of problem solving, basic atomic theory, chemical nomenclature, stoichiometry, gas laws, solutions, acid-base chemistry, and redox. The laboratory will be an introduction to quantitative techniques, descriptive chemistry, gas laws, and data treatment. Students will not receive credit toward graduation for more than one of the following courses: Chemistry 113, Chemistry 115 and Chemistry 120. (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-141

General Chemistry I 5 UNITS

Prerequisite: "C" grade or higher or "Pass" in Chemistry 120 or equivalent; OR the CHEM 141 assessment and intermediate algebra or appropriate mathematics placement.

3.0 hours lecture, 6.0 hours laboratory

Basic principles and calculation of chemistry with emphasis in stoichiometry, gas laws, kinetic-molecular theory, basic equilibrium including gas phase and solution phase, pH atomic and molecular structures, chemical bonding, and applications of the First Law of Thermodynamics. The laboratory is an introduction to classical and instrumental analysis, the principles of equilibrium, and atomic and molecular structures. (C-ID CHEM 110 and CHEM 120S with CHEM 142) (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-142**General Chemistry II****5 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 141 or equivalent.

3.0 hours lecture, 6.0 hours laboratory

Basic principles and calculations of chemistry with emphasis on the areas of thermodynamics, kinetics, aqueous equilibrium, electrochemistry, coordination chemistry, nuclear chemistry and an introduction to organic and biochemistry. The laboratory will demonstrate the concepts presented in lecture and in addition will introduce qualitative analysis. (C-ID CHEM 120S with CHEM 141) (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-231**Organic Chemistry I****5 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 142 or equivalent.

3.0 hours lecture, 6.0 hours laboratory

First of a two semester organic chemistry sequence. The topics covered will include nomenclature of organic compounds, stereochemistry, reaction mechanisms, and the study of representative reactions for certain classes of organic compounds. The relationship of structure to properties, reactivity and mechanism of reaction will be emphasized. Students will become familiar with organic structure and functional groups by performing organic reactions. These will include nucleophilic substitution, dehydration, and organic redox used to synthesize new compounds from starting materials. Students will become proficient at separation and purification techniques including TLC, column chromatography, recrystallizations and distillations. They will also utilize a variety of instrumentation including NMR, FTIR spectroscopy, gas chromatography, UV spectroscopy, and HPLC. (C-ID CHEM 160S with CHEM 232) (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-232**Organic Chemistry II****5 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 231 or equivalent.

3.0 hours lecture, 6.0 hours laboratory

Second of a two semester sequence. The topics covered will include: structure and reactivity of carboxylic acids and their derivatives, amines and other nitrogen functional groups, aromatic compounds, heterocyclic compounds, polyfunctional compounds, conjugation and aromaticity, and multistep organic synthesis. (C-ID CHEM 160S with CHEM 231) (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

CHEM-241**Organic Chemistry I Lecture****3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 142 or equivalent.

3.0 hours lecture

First of a two semester organic chemistry lecture sequence. The topics covered will include nomenclature of organic compounds, stereochemistry, reaction mechanisms, and the study of representative reactions for certain classes of organic compounds. The relationship of structure to properties, reactivity and mechanism of reaction will be emphasized. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

CHEM-241L**Organic Chemistry I Laboratory****2 UNITS**

Corequisite: "C" grade or higher or "Pass" in CHEM 241 or equivalent or concurrent enrollment in CHEM 241.

6.0 hours laboratory

First of a two semester organic chemistry laboratory sequence. The topics covered will include basic organic chemistry laboratory operations. Students will become familiar with organic structure and functional groups by performing organic reactions. These will include nucleophilic substitution, dehydration, and organic redox used to synthesize new compounds from starting materials. Students will become proficient at separation and purification techniques including TLC, column chromatography, recrystallizations and distillations. They will also utilize a variety of instrumentation including FTIR spectroscopy, gas chromatography, UV spectroscopy, and HPLC. They will also evaluate NMR data based on their experimental results. (CSU/UC) (AA/AS-B2, CSU-B3, IGETC-5C)

CHEM-242**Organic Chemistry II Lecture****3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 231 or CHEM 241 or equivalent.

Corequisite: "C" grade or higher or "Pass" in Chemistry 241L or equivalent or concurrent enrollment in Chemistry 241L.

3.0 hours lecture

Second of a two semester sequence. The topics covered will include: structure and reactivity of carboxylic acids and their derivatives, amines and other nitrogen functional groups, aromatic compounds, heterocyclic compounds, polyfunctional compounds, conjugation and aromaticity, and multistep organic synthesis. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

CHEM-242L**Organic Chemistry II Laboratory****2 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CHEM 231 or CHEM 241 and 241L or equivalent.

Corequisite: A "C" grade or higher or "Pass" in Chemistry 242 or equivalent or concurrent enrollment in Chemistry 242.

6.0 hours laboratory

Second of a two semester laboratory sequence. The topics covered will include: structure and reactivity of carboxylic acids and their derivatives, amines and other nitrogen functional groups, aromatic compounds, heterocyclic compounds, polyfunctional compounds, conjugation and aromaticity, and multistep organic synthesis. This class is intended as a second semester organic chemistry laboratory for students needing additional laboratory expertise. (CSU/UC) (AA/AS-B2, CSU-B3, IGETC-5C)