

# CHEMISTRY (CHEM)

## CHEM 9 Chemistry of Everyday Life

**3 Units** (Degree Applicable, CSU, UC)

UC Credit Limitation

Lecture: 54

Chemistry for non-majors. States of matter, scientific measurements and experimentation, periodic table, nomenclature, atomic and molecular structure, bonding, solubility, reactions, and acids and bases. Emphasis on chemistry principles and the scientific method as applied in medicine, health, environment, and everyday lives.

## CHEM 10 Chemistry for Allied Health Majors

**5 Units** (Degree Applicable, CSU, UC)

UC Credit Limitation

Lecture: 72 Lab: 54

**Prerequisite:** *Eligibility for MATH 130*

Measurements, structure, nomenclature (includes organic), formulas, reactions, radioactivity, energy, acids, bases, solutions and pH, and properties of solid, liquid, and gas. This course is appropriate for allied health majors. Completion does not give eligibility for CHEM 50.

## CHEM 20 Introductory Organic and Biochemistry

**5 Units** (Degree Applicable, CSU, UC)

UC Credit Limitation

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 10 or CHEM 40*

Nomenclature, structure, function, and reactions of major classes of organic compounds and of biomolecules, including amino acids, lipids, carbohydrates, nucleic acids (DNA and RNA), and proteins. Structure and function of vitamins, coenzymes, and enzymes. Metabolic pathways and biochemical energy. Recommended for allied health majors.

## CHEM 40 Introduction to General Chemistry

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM 101)

UC Credit Limitation

Lecture: 72 Lab: 54

**Prerequisite:** *Eligibility for MATH 130*

**Advisory:** *Eligibility for (ENGL C1000 or ENGL 1A) or (ENGL C1000H or ENGL 1AH) or AMLA 1A*

Measurements, atomic structure, chemical equations, stoichiometry, gases, solutions, acids and bases, bonding, nomenclature, matter, and energy. Completion prepares students to take CHEM 50.

## CHEM 50 General Chemistry I

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM 110)

UC Credit Limitation

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 40 or satisfactory score on Chemistry Placement Examination; and (MATH 71 or MATH 71B or MATH 71X or MATH 100 or (STAT C1000 or MATH 110) or (STAT C1000H or MATH 110H) or MATH 120 or MATH 130 or MATH 140 or MATH 160 or MATH 180)*

General Chemistry topics including chemical formulas, equations, nomenclature, reactions, stoichiometry, thermochemistry, periodic trends, atomic structure, chemical bonding and structure, and properties of gases, liquids, solids, and solutions. Emphasis is on critical thinking as well as mathematical and dimensional analysis problem-solving. Laboratory experiments emphasize the scientific method as well as computer-based technologies in data acquisition and analysis. Introduces laboratory report writing skills.

## CHEM 50H General Chemistry I - Honors

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM 110)

Lecture: 54 Lab: 108

**Prerequisite:** *Acceptance into the Honors Program. CHEM 40 or satisfactory score on Chemistry Placement Examination; and (MATH 71 or MATH 71B or MATH 71X or MATH 100 or (STAT C1000 or MATH 110) or (STAT C1000H or MATH 110H) or MATH 120 or MATH 130 or MATH 140 or MATH 160 or MATH 180)*

General Chemistry topics including chemical formulas, equations, nomenclature, reactions, stoichiometry, thermochemistry, periodic trends, atomic structure, chemical bonding and structure, and properties of gases, liquids, solids, and solutions. Emphasis is on critical thinking as well as mathematical and dimensional analysis problem-solving. Laboratory experiments emphasize the scientific method as well as computer-based technologies in data acquisition and analysis. Introduces laboratory report writing skills. An honors course designed to provide an enriched experience. Students may not receive credit for both CHEM 50 and CHEM 50H.

## CHEM 51 General Chemistry II

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM120S(50+51), (50+51))

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 50 or CHEM 50H*

Kinetics, equilibrium, thermodynamics, acid-base and oxidation-reduction reactions, transition metals, electrochemistry, and nuclear chemistry. Emphasis is on critical thinking and mathematical problem-solving. Laboratory experiments support lecture topics and use a variety of instrumentation and technology in data acquisition and analysis.

## CHEM 51H General Chemistry II - Honors

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM120S(50+51), (50H+51H))

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 50 or CHEM 50H and Acceptance into the Honors Program*

Kinetics, equilibrium, thermodynamics, acid-base and oxidation-reduction reactions, transition metals, electrochemistry, and nuclear chemistry. Emphasis is on critical thinking and mathematical problem-solving. Laboratory experiments support lecture topics and use a variety of instrumentation and technology in data acquisition and analysis. An honors course designed to provide an enriched experience. Students may not receive credit for both CHEM 51 and CHEM 51H.

**CHEM 55 Chemistry for Engineers**

**5 Units** (Degree Applicable, CSU, UC)

Lecture: 72 Lab: 54

**Prerequisite:** *CHEM 40 or satisfactory score on Chemistry Placement Examination and (MATH 71 or MATH 71B or MATH 71X or MATH 100 or (STAT C1000 or MATH 110) or (STAT C1000H or MATH 110H) or MATH 120 or MATH 130 or MATH 140 or MATH 160 or MATH 180)*

Topics including periodic table and atomic structure, bonding in solids, stoichiometry, chemical reactions, gases, thermodynamics, kinetics, equilibrium, electrochemistry, organic, polymers, and nuclear chemistry for engineering majors. Completion does not give eligibility for CHEM 51.

**CHEM 80 Organic Chemistry I**

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM 150,

CHEM160S(80+81))

UC Credit Limitation

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 51*

Designed for chemistry, biochemistry, chemical engineering and biology majors; also for those in pre-professional programs such as medicine, veterinary medicine, dentistry, optometry and pharmacy. Nomenclature, structure-reactivity relationships, energetics, reactions, reaction mechanisms, synthesis, separation, characterization and spectroscopic methods for organic compounds.

**CHEM 81 Organic Chemistry II**

**5 Units** (Degree Applicable, CSU, UC, C-ID #: CHEM 160S, (80+81))

Lecture: 54 Lab: 108

**Prerequisite:** *CHEM 80*

The second semester of a one-year course. Fundamental principles and concepts of organic chemistry including, structure, bonding, nomenclature, stereochemistry, and functional groups with emphasis on reactions and reaction mechanisms of aromatic compounds, phenols, ethers, carbonyl compounds, carboxylic acids, amines, and their derivatives. Multi-step syntheses, stereochemistry of reactions, and structure elucidation using modern instrumental methods are also included. An introduction to biomolecules (carbohydrates, lipids, and proteins) is presented.

**CHEM 99 Special Projects in Chemistry**

**2 Units** (Degree Applicable, CSU)

(May be taken for option of letter grade or Pass/No Pass)

Lab: 108

**Prerequisite:** *This course is an independent study course taken by a student who is interested in working on a project with a faculty. There is no formal instruction for the course and no format for independent projects. Prior instructor approval and approved independent learning contract required.*

Offers selected students recognition for their academic interest and ability and the opportunity to explore their disciplines to greater depth and breadth. The content of each course and the methods of study vary from semester to semester and depend on the particular project under consideration. Prior instructor approval and approved independent learning contract required.