

Chemistry (CHEM)

Why Study Chemistry? Chemistry addresses the fundamental nature of substances and the changes that substances undergo. Students learn problem-solving skills rooted in the scientific world view. Specifically, you will learn about the chemical aspects of everyday life enabling you to understand the chemical foundations of the environment, energy, disease (causes and prevention), and the chemical basis of nutrition. The study of chemistry helps you understand the fundamentals controlling the interactions of elements and molecules which form the basis for our world and the universe. Knowledge of the discipline enables you to practice the protocols and techniques for working safely with chemicals. Modern civilization is based on chemistry and its effects upon the environment and ourselves. Some of the consequences are considered better than others and studying chemistry allows us to search for alternatives that may be practical or feasible.

What can you do with Chemistry? Some people are motivated primarily by curiosity about nature and/or about how things work. Questions that might be answered in studying chemistry include: the chemical composition of rocks from this or other planets, the chemical composition of the atmosphere, or the chemical reactions behind technologies such as rocket propulsion and automobile airbag deployment. Chemistry is essential in the practice of medicine in allowing us to understand the chemistry underlying biology, pharmacology, and human physiology.

The COA chemistry program is designed to provide you with a solid grasp of the basics to achieve your long-term goals. **Careers in chemistry include:** analytical chemist, biotechnologist, biochemist, chemical engineer, dietitian, environmental chemist, food and drug inspector, forensic chemist, geochemist, health professional, perfumer, pharmacist, professor, and many others.

CHEM 1A General Chemistry

- 5 units, 3 hours lecture, 6 hours laboratory (GR)
- Pre-Requisites: MATH 203; or MATH 211 D & CHEM 30A; or Chemistry Assessment; or Completion of ALEKS chemistry preparation course
- Recommended Preparation: ESOL 52; or ESOL 52A; or ESOL 52B; or ENGL 001A; or ENGL 001AS;
- Acceptable for credit: CSU, UC

General principles of chemistry: Measurements, atomic theory, chemical nomenclature, chemical composition, stoichiometry, reactions in aqueous solution, thermochemistry, electron configurations, periodic properties, chemical bonding, gases, liquids, solids, and solutions. 1905.00

AA/AS area 1; CSU area B1, B3; IGETC area 5A/5C

CHEM 1B General Chemistry

- 5 units, 3 hours lecture, 6 hours laboratory (GR)
- Prerequisite: CHEM 1A
- Acceptable for credit: CSU, UC

General principles of chemistry: Kinetics, equilibrium, acid-base equilibria, buffers, solubility equilibria, entropy and free energy, electro-chemistry, nuclear chemistry, coordination chemistry, and an introduction to organic chemistry. 1905.00

AA/AS area 1; CSU area B1, B3; IGETC area 5A/5C

CHEM 30A Introductory General Chemistry

- 4 units, 3 hours lecture, 3 hours laboratory (GR)
- Prerequisite: MATH 201 or 208 or 210D
- Acceptable for credit: CSU, UC

Fundamental principles of general chemistry: Metric measurements, matter and energy, atomic structure, chemical nomenclature, chemical bonding, chemical reactions, stoichiometry, gas laws, nuclear chemistry, properties of liquids, solids, solutions, acids and bases. 1905.00

AA/AS area 1; CSU area B1, B3; IGETC area 5A/5C

CHEM 30B Introductory Organic and Biochemistry

- 4 units, 3 hours lecture, 3 hours laboratory (GR)
- Prerequisite: CHEM 30A
- Acceptable for credit: CSU, UC

Introduction to basic organic chemistry and biochemistry: Hydrocarbons; organic functional groups, nomenclature, and reactions; polymers, carbohydrates, proteins, enzymes, lipids, nucleic acids, protein synthesis, and metabolic pathways. 1905.00

AA/AS area 1; CSU area B1, B3; IGETC area 5A/5C

CHEM 49 Independent Study in Chemistry

- .5-5 units, .5-5 hours lecture (GR)

Acceptable for credit: CSU

See section on Independent Study. 1905.00