

CHEMISTRY

CHEM V01A - GENERAL CHEMISTRY I - 3 Units

Prerequisite: MATH V03 or 1 year of high school intermediate algebra (Algebra II); and CHEM V20-V20L or high school chemistry with grades of C or better

Hours: 3 lecture weekly

This course is an introduction to matter and energy, atomic structure, nomenclature, chemical equations, stoichiometry, gases, thermochemistry, quantum chemistry, bonding, molecular geometry, oxidation-reduction, liquids and solids, and solutions.

Formerly Chem 1A. Transfer credit: CSU; UC. **CAN CHEM 2 [with CHEM V01AL] or CAN CHEM SEQ A [with CHEM V01AL+V01B+ V01BL].**

CHEM V01AL - GENERAL CHEMISTRY I

LABORATORY - 2 Units

Prerequisite: CHEM V01A or concurrent enrollment

Hours: 6 laboratory weekly

The laboratory provides the students with experience in applying the principles developed in the lecture. Quantitative experiments that illustrate the fundamental laws of chemistry are emphasized.

Field trips may be required. Formerly Chem 1AL. Transfer credit: CSU; UC. **CAN CHEM 2 [with CHEM V01A] or CAN CHEM SEQ A [with CHEM V01A+V01B+V01BL].**

CHEM V01B - GENERAL CHEMISTRY II - 3 Units

Prerequisite: CHEM V01A with grade of C or better

Hours: 3 lecture weekly

This course presents a detailed study of chemical equilibrium, kinetics, electrochemistry, chemical thermodynamics, and a brief introduction to organic chemistry and nuclear reactions.

Formerly Chem 1B. Transfer credit: CSU; UC. **CAN CHEM 4 [with CHEM V01BL] or CAN CHEM SEQ A [with CHEM V01A+V01AL+ V01BL].**

CHEM V01BL - GENERAL CHEMISTRY II

LABORATORY - 2 Units

Prerequisite: CHEM V01B or concurrent enrollment

Hours: 6 laboratory weekly

The laboratory provides the student with experience in applying principles developed in the general chemistry lecture, including experiments in kinetics, equilibrium, electrochemistry, thermochemistry, qualitative analysis, and organic chemistry.

Field trips may be required. Formerly Chem 1BL. Transfer credit: CSU; UC. **CAN CHEM 4 [with CHEM V01B] or CAN CHEM SEQ A [with CHEM V01A+V01AL+V01B].**

CHEM V05 - QUANTITATIVE ANALYSIS - 4 Units

Prerequisite: CHEM V01B-V01BL with grades of C or better

Hours: 2 lecture, 6 laboratory weekly

The practice and theory of chemical laboratory methods including techniques of gravimetric, volumetric, spectrophotometric analysis and separation, and introductory instrumental analysis with a focus on precision and accuracy of experimental data. The laboratory sequence will support the above topics and emphasize quantitative measurement, analysis of data and error propagation.

Field trips may be required. Transfer credit: CSU; UC.

CHEM V10 - CHEMISTRY AND YOUR WORLD - 4 Units

Hours: 4 lecture weekly

A college-level course in chemistry for non-science majors. The fundamentals of chemistry are covered, including scientific thinking, the atom, chemical formulas and equations. Organic chemistry and biochemistry are also studied. Other topics include plastics, foods, fitness, health, household chemicals, drugs and environmental pollution.

Field trips may be required. Formerly Chem 10. Transfer credit: CSU; UC; credit limitations - see counselor.

CHEM V10L - CHEMISTRY AND YOUR WORLD LABORATORY - 1 Unit

Prerequisite: CHEM V10 or concurrent enrollment

Hours: 3 laboratory weekly

This course consists of laboratory investigations of chemicals used every day. Safety in the lab and at home is emphasized. Various experimental techniques are investigated such as chromatography, dialysis, filtration, differential solubilities. These techniques are used to investigate foods, household chemicals, drugs, air pollution and water pollution. Light, the atom, chemical changes, physical changes, chemical reactions and the properties of water are also covered.

Field trips may be required. Formerly Chem 10L. Transfer credit: CSU; UC; credit limitations - see counselor.

CHEM V12A - GENERAL ORGANIC CHEMISTRY I - 3 Units

Prerequisite: CHEM V01B-V01BL with grades of C or better

Hours: 3 lecture weekly

This course stresses molecular structure, chemical and physical properties, and the preparation of organic compounds with an emphasis on reaction mechanisms, structure determination, synthesis, and applications.

Formerly Chem 12A. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 22 [with CHEM V12AL] or CAN CHEM SEQ C [with CHEM V12AL+ V12B+V12BL].**

CHEM V12AL - GENERAL ORGANIC CHEMISTRY I LABORATORY - 2 Units

Prerequisite: CHEM V12A with grade of C or better or concurrent enrollment

Hours: 6 laboratory weekly

This course covers the utilization of the techniques of experimental organic chemistry including physical and chemical methods of purification, separation, and structure determination, with an emphasis on synthesis and mechanisms. Infrared spectroscopy and nuclear magnetic resonance are used extensively in this course.

Field trips may be required. Formerly Chem 12AL. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 22 [with CHEM V12A] or CAN CHEM SEQ C [with CHEM V12A+V12B+V12BL].**

CHEM V12B - GENERAL ORGANIC CHEMISTRY II - 3 Units

Prerequisite: CHEM V12A with grade of C or better

Hours: 3 lecture weekly

This course continues the study of functional groups such as carboxylic acids and their derivatives, carbonyls, amines and phenols. The emphasis is again on reaction mechanism, structure determination using nuclear magnetic resonance and infrared spectroscopy, synthesis and applications. A major part of this semester is devoted to the study of biochemistry.

Formerly Chem 12B. Transfer credit: CSU; UC. **CAN CHEM SEQ C [with CHEM V12A+ V12AL+V12BL].**

**CHEM V12BL - GENERAL ORGANIC CHEMISTRY II
LABORATORY - 2 Units**

Prerequisite: CHEM V12AL with grade of C or better; and CHEM V12B with grade of C or better or concurrent enrollment
Hours: 6 laboratory weekly

This course covers the utilization of the techniques of experimental organic chemistry including chemical and physical separations, purification, chemical syntheses, extraction methods, and structure determinations, with an emphasis on functional group analysis, reactivity and mechanisms. Extensive use of infrared spectroscopy, and analysis of gas chromatography, nuclear magnetic resonance and mass spectra will be included.

Field trips may be required. Formerly Chem 12BL. Transfer credit: CSU; UC. **CAN CHEM SEQ C [with CHEM V12A+ V12AL+V12B].**

CHEM V20 - ELEMENTARY CHEMISTRY - 4 Units

Prerequisite: MATH V01 or MATH V11B or 1 year of high school beginning algebra with grade of C or better

Recommended preparation: MATH V03

Hours: 4 lecture weekly

This course includes fundamental theories, laws, and techniques of general chemistry, together with their more important applications, drill in chemical formulas, equations and calculations.

Formerly Chem 20. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 6 [with CHEM V20L] or CAN CHEM SEQ B [with CHEM V20L+V21+V21L].**

CHEM V20L - ELEMENTARY CHEMISTRY

LABORATORY - 1 Unit

Prerequisite: CHEM V20 or concurrent enrollment

Hours: 3 laboratory weekly

This course is an introduction to laboratory techniques. The experiments illustrate typical chemical reactions and the principles covered in the lecture.

Formerly Chem 20L. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 6 [with CHEM V20] or CAN CHEM SEQ B [with CHEM V20+V21+V21L].**

**CHEM V21 - INTRODUCTION TO ORGANIC AND
BIOCHEMISTRY - 3 Units**

Prerequisite: CHEM V01A-V01AL or CHEM V20-V20L or high school chemistry with grades of C or better

Hours: 3 lecture weekly

This course is an introduction to organic and biological chemistry. The course covers the preparation, chemical and physical properties and commercial and technical application of both organic and biological compounds.

Formerly Chem 21. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 8 [with CHEM V21L] or CAN CHEM SEQ B [with CHEM V20+V20L+V21L].**

**CHEM V21L - INTRODUCTION TO ORGANIC AND
BIOCHEMISTRY LABORATORY - 2 Units**

Prerequisite: CHEM V21 with grade of C or better or concurrent enrollment

Hours: 6 laboratory weekly

This course is an introduction to organic and biological chemistry laboratory. The reactions and properties of both organic and biological compounds will be studied.

Formerly Chem 21L. Transfer credit: CSU; UC; credit limitations - see counselor. **CAN CHEM 8 [with CHEM V21] or CAN CHEM SEQ B [with CHEM V20+V20L+V21].**

CHEM V30 - CHEMISTRY FOR HEALTH SCIENCES - 4 Units

Prerequisite: MATH V01 or MATH 11B or MATH V30 or one year of high school beginning algebra with grade of C or better

Hours: 4 lecture weekly

This course is for biological and health science majors. General, organic and biological chemistry are studied with an emphasis placed on medical applications. Topics in general chemistry will include the modern view of the atom, molecules, chemical compounds and reactions. Topics in organic chemistry will include hydrocarbons, alcohols, aldehydes and ketones. Topics in biochemistry will include carbohydrates, proteins, lipids, nucleic acids and metabolism.

Field trips may be required. Transfer credit: CSU; UC.

CHEM V30L - CHEMISTRY FOR HEALTH SCIENCES

LABORATORY - 1 Unit

Prerequisite: CHEM V30 or concurrent enrollment

Hours: 3 laboratory weekly

This course consists of laboratory investigations of general, organic and biological chemistry with an emphasis on medical applications. Experiments in general chemistry will include measuring densities, the separation of mixtures and chemical reactions. Experiments in organic chemistry will include examining the properties of hydrocarbons, alcohols, aldehydes and ketones. Experiments in biochemistry will include examining carbohydrates, proteins and fats.

Field trips may be required. Transfer credit: CSU; UC.

CHEM V89 - WORKSHOPS IN CHEMISTRY - .5-10 Units

Prerequisite: varies with topic

Hours: lecture and/or laboratory as required by unit formula

Designed to meet specific needs of the college and community as required and requested by persons whose needs in this area are not met by present course offerings.

Fees may be required. Courses with same title may not be repeated; may be taken for a maximum of 4 times. Formerly Chem 89. Transfer credit: CSU; for UC, determined after admission.

CHEM V90 - DIRECTED STUDIES IN CHEMISTRY - 1-6 Units

Prerequisite: varies with topic

Hours: lecture and/or laboratory as required by unit formula

This course offers specialized opportunities for students with intermediate skills who wish to pursue projects not included in the regular curriculum. Students are accepted only by written project proposal approved by the discipline prior to enrollment.

Field trips may be required. May be taken for a maximum of 4 times not to exceed 6 units. Formerly Chem 90. Transfer credit: CSU; for UC, determined after admission.