

# Chemistry

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The Chemistry Program at Folsom Lake College consists of:

- A series of chemistry courses designed to meet transfer requirements for physical and biological science majors
- A series of courses intended for students majoring in fields other than chemistry, biology, or physical science
- A course designed specifically for students who require preparation or review of the more basic chemical concepts

All chemistry courses at FLC include a practical component where students conduct hands-on chemical experimentation in a modern, well-equipped laboratory.

## Career Options

Chemist; Pharmacist; Chemical Engineer; Physician; Dentist; Veterinarian; Allied Health Professional; Biologist; Physicist; Geologist; Geochemist; Oceanographer

Some career options may require more than two years of college study. Classes beyond the associate degree may be required to fulfill some career options or for preparation for transfer to a university program.

## Highlights

An outstanding chemistry faculty striving to maintain an aggressive and well-respected chemistry program

Ample contact with the instructor and the relaxed atmosphere that only a limited class size can offer

## NOTE: ALL CHEMISTRY STUDENTS

A glassware replacement deposit is required to participate in designated Chemistry courses. The deposit is payable at the Admissions Office prior to the third class meeting. This deposit is refundable at the end of the semester; however, if chemical glassware is broken or missing, the charge will be deducted from the deposit. (Title V, Section 59400 and District Policy 2253)

## Chemistry (CHEM)

### CHEM305

#### Introduction to Chemistry 5 Units

Formerly: CHEM 2A, CHEM 307

Prerequisite: MATH 100 with a grade of "C" or better; Math 102 or equivalent.

Grade "C" or better required to meet prerequisite

Advisory: None

Hours: 72 hours lecture, 54 hours laboratory

This course covers principles of chemistry and scientific method, including a brief introduction of organic chemistry. It is primarily designed for general education and majors in allied health, home economics, physical education, physical therapy(\*), psychology(\*), natural resources(\*). \*May require CHEM 400.

### CHEM306

#### Introduction to Chemistry 5 Units

Formerly: CHEM 2B, CHEM 308

Prerequisite: CHEM 305 (formerly CHEM 307) with a grade of "C" or better

Hours: 72 hours lecture, 54 hours laboratory

CHEM 306 is a continuation of CHEM 305. This course covers the organic functional groups and reactions involved in the mechanisms of the chemistry of life processes (biochemistry) particularly as applied to the health sciences.

### CHEM321

#### Environmental Chemistry 3 Units

Formerly: CHEM 7

Prerequisite: None

Course Transferable to UC/CSU

Hours: 54 hours LEC

This course explores the interrelationship of human beings and the surrounding environment with regard to the chemical substances that are encountered in everyday life. The role of chemistry in both creating environmental problems as well as providing solutions to environmental problems will be examined. Students will learn how chemicals released to the environment can have adverse effects on ecosystems and human health. Chemical and physical methods of controlling and remediating air, water, and soil pollutants will be covered. The role of environmental regulations in preventing and mitigating environmental degradation will also be covered. By the completion of this course, students will have acquired skills and techniques that can be utilized to examine environmental problems and their proposed solutions.

**CHEM322****Environmental Chemistry Laboratory 1 Unit**

Formerly: CHEM 7L

*Prerequisite: None**Corequisite: CHEM 321 (may be taken previously). Grade of "C" or better required to meet corequisite .**Course Transferable to UC/CSU**Hours: 54 hours LAB*

This course provides "hands-on" opportunities for students to collect and analyze data about chemicals found in the environment. Students will learn how to collect and analyze soil, water and air samples for environmental quality parameters and the presence of pollutants. Analysis of samples will involve the use of readily available field test equipment. Field trips for sample collection will take place during laboratory periods or at arranged times. There may also be field trips to environmental analytical laboratories.

**CHEM400****General Chemistry 5 Units**

Formerly: CHEM 1A

*Prerequisite: MATH 120 and CHEM 300 (or one year of high school chemistry).**Grade of "C" or better required to meet prerequisite.**Course Transferable to UC/CSU; UC-See Counselor**(CAN CHEM 2) (CHEM 400 + 401 = CAN CHEM SEQ A)**Hours: 54 hours LEC ; 108 hours LAB*

This is a general college chemistry course intended for students majoring in the scientific disciplines including chemistry, biology, physics, geology and engineering. This course emphasizes the fundamental principles of chemistry. Topics include chemical measurement, physical and chemical processes, nomenclature, atomic structure, quantum theory, stoichiometry, molecular structure, bonding theory, physical properties of gases, thermochemistry, modern materials, and properties of solutions.

**CHEM401****General Chemistry 5 Units**

Formerly: CHEM 1B

*Prerequisite: CHEM 400. Grade of "C" or better required to meet prerequisite.**Course Transferable to UC/CSU; UC-See Counselor**(CAN CHEM 4) (CHEM 400 + 401 = CAN CHEM SEQ A)**Hours: 54 hours LEC ; 108 hours LAB*

This course is a continuation of the two-semester series in general college chemistry. Topics presented in the course include kinetics, equilibrium, acid/base chemistry, thermodynamics, electrochemistry, radiochemistry, coordination chemistry, and an introduction to organic chemistry. Laboratory exercises include qualitative and quantitative analysis techniques.

**CHEM410****Quantitative Analysis 5 Units**

Formerly: CHEM 5

*Prerequisite: CHEM 401. Grade of "C" or better required to meet prerequisite.**Course Transferable to UC/CSU**(CAN CHEM 12)**Hours: 54 hours LEC ; 108 hours LAB*

This course focuses on the principles and techniques involved in fundamental gravimetric and volumetric analyses and separation techniques including methods of data analysis, precipitation, acid/base neutralization, complex formation, oxidation-reduction, spectroscopy and chromatography. Also included is an introduction to modern instrumental analytical procedures with emphasis on optical, electrochemical and chromatographic techniques. Emphasis throughout the course will be on sampling, calibration and method validation procedures.

**CHEM420****Organic Chemistry 5 Units***Prerequisite: CHEM 401 with grade of "C" or better**Course Transferable to CSU; UC pending**Hours: 54 hours LEC; 108 hours LAB*

This is a lecture/laboratory course designed to introduce students to the basics of organic chemistry. This course is designed for science majors, pre-med, pre-dental, and pre-pharmacy majors. Lecture topics will include a review of acid/base chemistry, pushing electrons, organic nomenclature, alkane chemistry, alkene chemistry, alkyl halides, alcohols, ethers, physical properties of alkanes and cycloalkanes, SN1, SN2, E1, E2 mechanisms. Laboratory work will include physical properties of organic molecules, analytical chemistry of organic molecules using modern instrumentation (GC, GC/MS, NMR, FTIR, polarimetry, and HPLC). Separation and purification of organic compounds will also be covered in the lab section, including distillation, recrystallization, preparative chromatography and thin-layer chromatography.

**CHEM421****Organic Chemistry 5 Units***Prerequisite: CHEM 420 with a grade of "C" or better**Course Transferable to CSU; UC pending**Hours: 54 hours LEC ; 108 hours LAB*

This course is lecture-laboratory course that is a continuation of Chemistry 420. This course concludes an introduction to organic chemistry. This course is designed for science majors, pre-med, pre-dental, and pre-pharmacy majors. Lecture topics include the chemistry of ethers, epoxides, conjugated dienes, aromatic compounds, carbonyl compounds, enolate condensation, amines, phenols, polymerization reactions, and selected biologically important compounds. The course also includes continued application of spectroscopic methods (IR, NMR, UV-vis and MS) applied to organic chemistry. Laboratory emphasis is on the preparation, isolation, quantitation, purification, identification and mechanism elucidation using both traditional and instrumental techniques. Students will continue to expand their ability to operate and utilize a variety of modern chemical instrumentation - gas chromatography, high performance liquid chromatography, fourier transform - infrared spectroscopy, and gas chromatography-mass spectroscopy.

**CHEM495****Independent Studies in Chemistry****1-3 Units**

Formerly: CHEM 49I

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: Variable*

*See Catalog under Alternative Credit/*

*Study Options*

**CHEM499****Experimental Offering in Chemistry****.5-4 Units**

Formerly: CHEM 49

*Prerequisite: None*

*Course Transferable to UC/CSU; UC-See*

*Counselor*

*Hours: Variable*

*See Catalog under Alternative Credit/*

*Study Options*