

# CHEMISTRY (CHEM)

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## CHEM 1A (C-ID CHEM 110) 5.5 units

### General Chemistry

#### 72 hours lecture, 90 hours laboratory

Prerequisite: (1) CHEM 2 or qualifying through the LBCC chemistry placement process and (2) intermediate algebra or qualifying through the LBCC math placement process.

Grading: letter grade or pass/no pass.

This course is the first semester of a one year course which satisfies the general chemistry requirement for science, engineering, and premed majors. Topics covered include atomic theory and bonding, the periodic table and chemical properties, thermochemistry, chemical reactions, solids, liquids and solutions, gases and the ideal gas laws, and an introduction to equilibrium. There is an emphasis on stoichiometric calculations. The lab stresses quantitative measurements in chemical reactions.

Transferable to both UC and CSU; see counselor for limitations

## CHEM 1B (C-ID CHEM 120S) 5.5 units

### General Chemistry

#### 72 hours lecture, 90 hours laboratory

Prerequisite: CHEM 1A.

Grading: letter grade or pass/no pass.

This course is the second semester of a one-year course and fulfills the general chemistry requirement for students in science, engineering, physics, pre-dental, pre-medical, and pre-pharmacy programs. Topics covered include equilibrium of weak acids and bases, slightly soluble salts and complex ions in aqueous solution. The basic principles of thermodynamics and electrochemistry are presented, along with an introduction to coordination, nuclear and organic chemistry. The lab stresses descriptive inorganic chemistry, basic physical and organic chemistry and qualitative analysis.

Transferable to both UC and CSU; see counselor for limitations

## CHEM 2 (C-ID CHEM 101) 4.5 units

### Elementary Chemistry

#### 72 hours lecture, 36 hours laboratory

Prerequisite: Elementary algebra or qualifying through the LBCC math placement process.

Grading: letter grade or pass/no pass.

This course is a prerequisite for CHEM 1A and prepares science or pre-professional majors, who are required to take Chem 1A, but lack adequate preparation or need to refresh knowledge. This course provides basic knowledge and problem-solving techniques necessary for CHEM 1A-B. Formula and equation writing, basic gas laws and stoichiometry are stressed. Students should be aware that many schools (CSULB included) do not allow credit for Chem 2, once Chem 1A (or the equivalent course at that school) has been successfully completed.

Transferable to both UC and CSU; see counselor for limitations

## CHEM 3 (C-ID CHEM 102) 5 units

### Intro to Gen, Organic and Biochemistry

#### 72 hours lecture, 54 hours laboratory

Prerequisite: Elementary algebra or qualifying through the LBCC math placement process.

Grading: letter grade or pass/no pass.

This course will introduce the principles of general, organic and biological chemistry. A variety of topics will be addressed, including atomic theory, chemical formulas, nomenclature, stoichiometry, solutions, acids and bases, hydrocarbons, alcohols and ethers, carbonyl compounds, carbohydrates, lipids, amino acids and proteins, nucleic acids, biochemical energetics and metabolism. Lab work will reinforce basic concepts and provide experience in manipulating lab equipment. This course satisfies the needs of Nursing and Allied Health Sciences. This course does not prepare students for CHEM 1A.

Transferable to both UC and CSU; see counselor for limitations

## CHEM 4 (C-ID CHEM 140) 4 units

### Survey of Chemistry and Physics

#### 54 hours lecture, 54 hours laboratory

Prerequisite: Elementary algebra or qualifying through the LBCC math placement process.

Grading: letter grade.

This is a one semester, inquiry-based physical science course suitable for satisfying the general education requirements of non-science majors and especially of students who aspire to become elementary school teachers. Students construct a meaningful understanding of physics and chemistry concepts through lecture and laboratory activities. The course covers: matter, physical and chemical properties, energy, motion, light, atomic structure, bonding, solutions and chemical reactions. The interdependence of chemistry and physics, their applications in everyday life, and the power and limitations of scientific inquiry will be emphasized.

Not open to student who already have credit for PHYS 4.

Transferable to both UC and CSU; see counselor for limitations

## CHEM 12A (C-ID CHEM 150) 5.5 units

### Organic Chemistry

#### 72 hours lecture, 90 hours laboratory

Prerequisite: CHEM 1A and CHEM 1B.

Grading: letter grade or pass/no pass.

The course emphasizes bonding, structure, properties and reactions of organic compounds. Modern spectroscopic and analytical techniques are covered, and an emphasis is placed on reaction mechanisms and kinetics. The laboratory part of the course stresses the techniques involved in the synthesis of organic compounds. This is the first semester of a two-semester sequence of courses which satisfies the Chemistry requirement for science, engineering, and pre-medical or pre-dental majors.

Transferable to both UC and CSU; see counselor for limitations

**CHEM 12B (C-ID CHEM 160) 5.5 units**

**Organic Chemistry**

**72 hours lecture, 90 hours laboratory**

Prerequisite: CHEM 12A.

Grading: letter grade or pass/no pass.

The course emphasizes bonding, structure, and reactions of organic compounds. Modern spectroscopic and analytical techniques are covered, and an emphasis is placed on reaction mechanisms and synthesis. The laboratory part of the course stresses techniques involved in the synthesis of organic compounds. This is the first semester of a two semester sequence of courses which satisfies the Chemistry requirement for science, engineering, and pre-medical, pre-pharmacy or pre-dental majors.

Transferable to both UC and CSU; see counselor for limitations