

Chemistry

School of Physical Sciences and Technologies

Dean: Ruth Jacobson

Academic Chair: Kiana Tabibzadeh

Faculty: Dale Carranza, Walter Floser, Dr. John Pettus, Kiana Tabibzadeh

Curriculum

The chemistry curriculum is designed to foster an understanding of the fundamental principles of chemistry in a variety of applications—medicine, health-care products, energy, food production, body metabolism, structural materials, microelectronics, and the environment. Students learn how chemical knowledge is derived, theorized, and applied in solving problems in everyday life. They perform experiments in a modern chemistry laboratory with state-of-the-art equipment under the guidance of experienced faculty. In addition, students have an opportunity to enhance their understanding of chemical concepts and improve their laboratory skills through a series of computer-aided lessons and exercises. The chemistry curriculum is designed to meet the needs of students who wish to pursue a major in (1) chemistry, biology, marine science, geology, physics, medicine, engineering, or technology; (2) paramedical or allied health science, including nursing, dental hygiene, physical therapy, or nutrition; or (3) liberal arts.

Associate in Arts Degree in Chemistry

Students must complete a minimum of 60 units of credit, including the courses in the major and general education requirements (page 57), with an overall GPA of 2.0 or better. A minimum of 12 units must be completed at Irvine Valley College. See pages 54–55 for further information, including other options for fulfilling the major requirement.

Transfer Preparation

Courses that fulfill major requirements for an associate degree at Irvine Valley College may not be the same as those required for completing the major at a transfer institution offering a baccalaureate degree. Students who plan to transfer to a four-year college or university should (1) refer to the transfer section of this catalog, (2) consult the catalog of their prospective transfer institution (see the IVC Transfer Center for assistance), and (3) schedule an appointment with an IVC counselor to develop a plan of study before beginning their program. It may be helpful to meet with the department faculty at IVC.

Associate in Arts Degree Chemistry Major

Complete the following courses:		Units
*CHEM 1A	General Chemistry I	5
CHEM 1B	General Chemistry II	5
CHEM 12A	Organic Chemistry	5
CHEM 12B	Organic Chemistry	5
TOTAL UNITS:		20

* Students who have not successfully completed high school chemistry should complete CHEM 3 prior to enrolling in CHEM 1A.

Recommended electives: BIO 2, 5; Mathematics (at least first-year calculus); Physics (choose appropriate series, PHYS 2A and 2B or 4A and 4B).

Courses

CHEM 1A: General Chemistry I **5 Units**

3 hours lecture, 6 hours lab

Prerequisite: Math 253. *Recommended Preparation:* Recent completion of Chem. 3 or high school chemistry. *Concurrent enrollment in Chem. 106.*

This course is a study of the principles of general chemistry. Topics include atomic and molecular structure, bonding, nomenclature, chemical formulas, chemical equations, stoichiometry, thermochemistry, gases, liquids, solids, and solutions. (CAN CHEM 2; Chem. 1A+1B: CAN CHEM SEQ A) NR

CHEM 1B: General Chemistry II **5 Units**

3 hours lecture, 6 hours lab

Prerequisite: Chem. 1A. *Recommended Preparation:* Concurrent enrollment in CIS 181L.

Chemistry 1B includes the following topics: equilibria and kinetics, acids and bases, oxidation-reduction, electrochemistry, coordination chemistry, nuclear chemistry, and qualitative analysis. (CAN CHEM 4; Chem. 1A+1B: CAN CHEM SEQ A) NR

CHEM 3: Fundamental Chemistry **4 Units**

3 hours lecture, 3 hours lab

Recommended Preparation: Prior completion of or concurrent enrollment in Math 253 and concurrent enrollment in CIS 181L.

This is a study of some basic principles of chemistry designed especially for the student who intends to take Chemistry 1A but needs more preparation. Topics include problem-solving and calculation methods, nomenclature, formulas, equations, stoichiometry, thermochemistry, atomic and molecular structure, bonding, gases, solutions, acids, and bases. UC credit provisions (see UC course list). NR

CHEM 4: Introduction to General and Organic Chemistry and Biochemistry **5 Units**

4 hours lecture, 3 hours lab

This course introduces major topics of general and organic chemistry, and biochemistry. This course is designed primarily for students planning to enter a nursing program or an allied health or paramedical field, and liberal arts majors. The following topics are included: measurements; atomic structure; bonding; nomenclature; solutions; kinetics; equilibria; acids and bases; common functional groups; carbohydrates; lipids; proteins; enzymes; nucleic acids; and digestion, metabolism, pathways, and other biochemical reactions. UC credit provisions (see UC course list). NR

CHEM 12A: Organic Chemistry **5 Units**

3 hours lecture, 6 hours lab

Prerequisite: Chem. 1B. Recommended Preparation: Concurrent enrollment in CIS 181L.

This is a study of the principles, theories, and reactions of organic chemistry with an emphasis on the relations of structure and reactivity. The course is recommended for students whose major is chemistry or a closely related field, such as biology, biochemistry, or chemical engineering. The following topics are included: stereochemistry, aliphatic and aromatic compounds, preparations and reactions of certain organic compound types, and spectroscopic methods. UC credit provisions (see UC course list). NR

CHEM 12B: Organic Chemistry **5 Units**

3 hours lecture, 6 hours lab

Prerequisite: Chem. 12A. Recommended Preparation: Concurrent enrollment in CIS 181L.

This is a continuation of Chemistry 12A. The following topics are included: preparations and reactions of certain organic compound types, polynuclear and heterocyclic compounds, polymers, lipids, carbohydrates, amino acids, proteins, and biochemical processes. NR

CHEM 106: Basics of Chemistry **2 Units**

2 hours lecture

Corequisite: Chem. 1A. Recommended Preparation: Prior completion of or concurrent enrollment in Math 253.

This course provides the student with a strong background in the basics of chemistry through discussion, problem solving, and drill sessions. NR