

The Faculty

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Chemistry

The 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 will learn how chemical knowledge is derived, theorized, and applied in solving problems in everyday life. Students will perform experiments in a modern chemistry laboratory with state-of-the-art equipment under the guidance of experienced faculty. In addition, students will 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.

If you intend to transfer:

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. If you plan to transfer to a four-year college or university, you should (1) refer to the transfer section of this catalog, (2) consult the catalog of your 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 you begin your program. In addition, it may be helpful to meet with the appropriate department faculty at IVC.

If you plan to complete an associate degree:

You must complete the following set of courses to fulfill the major requirement and, in addition, meet the general education requirements listed on page 21 for the Associate in Arts (A.A.) degree. Refer to page 16 for additional options for fulfilling the major requirement.

CHEMISTRY MAJOR

(A.A. Degree)

		<i>Units</i>
CHEM 1A†	General Chemistry	5
CHEM 1B	General Chemistry	5
CHEM 12A	Organic Chemistry	5
CHEM 12B	Organic Chemistry	<u>5</u>
	Total units:	20

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

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

Chemistry Courses

CHEM 1A 5 units GENERAL CHEMISTRY I

Prereq: Math 253. Recom: Recent completion of Chem. 3 or high school chemistry. Concurrent enrollment in Chem. 106. This course is the 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
Lecture hours: 3 Lab hours: 6

CHEM 1B 5 units GENERAL CHEMISTRY II

Prereq: Chem. 1A. Recom: 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
Lecture hours: 3 Lab hours: 6

CHEM 3 4 units FUNDAMENTAL CHEMISTRY

Recom: 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
Lecture hours: 3 Lab hours: 3

CHEM 4 5 units INTRODUCTION TO GENERAL AND ORGANIC CHEMISTRY AND BIOCHEMISTRY

Recom: Math 350. This course introduces major topics of general and organic chemistry, and biochemistry. The 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
Lecture hours: 4 Lab hours: 3

CHEM 12A 5 units ORGANIC CHEMISTRY

Prereq: Chem. 1B. Recom: 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
Lecture hours: 3 Lab hours: 6

CHEM 12B 5 units ORGANIC CHEMISTRY

Prereq: Chem. 12A. Recom: 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
Lecture hours: 3 Lab hours: 6

CHEM 99 0.5-5 units SEMINAR IN CHEMISTRY

Chemistry 99 is a lower-division seminar given over to the study of a specific topic, issue, or problem within chemistry which is not part of the regular college curriculum. Granting of UC credit for courses of this kind is contingent upon a review of the course outline by a UC campus. R-D
Lecture hours: 0.5-5 Lab hours: 0.5-5

CHEM 100 4 units CHEMISTRY OF EVERYDAY LIFE

Recom: Concurrent enrollment in CIS 181L. This course looks at issues of contemporary interest to the layperson from a chemical point of view. The chemistry employed is limited to that necessary for a student to understand the chemical principles involved in such selected topics as foods and food additives, vitamins, drugs, household chemicals, polymers, energy production, nuclear power, and chemical pollution. NR
Lecture hours: 3 Lab hours: 3

CHEM 106 2 units BASICS OF CHEMISTRY

Coreq: Chem. 1A. Recom: 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
Lecture hours: 2

CHEM 189 0.5-5 units SPECIAL TOPICS IN CHEMISTRY

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of chemistry. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course. R-E
Lecture hours: 0.5-5 Lab hours: 0.5-5

CHEM 199 0.5-5 units SEMINAR IN CHEMISTRY

Chemistry 199 is a lower-division seminar given over to the study of a specific topic, issue, or problem within chemistry which is not part of the regular college curriculum. R-E
Lecture hours: 0.5-5 Lab hours: 0.5-5

CHEM 289 0.5-5 units SPECIAL TOPICS IN CHEMISTRY

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of chemistry. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course. R-E
Lecture hours: 0.5-5 Lab hours: 0.5-5