

Chemistry

Math & Science Division

Program Description

This program is designed to foster an understanding of the fundamental principles of chemistry in a variety of applications. Students will learn how chemical knowledge is derived, theorized, and applied in solving problems in everyday life.

Associate in Science Degree

The Associate in Science Degree can be obtained by completing 60 units, including the 27-29 unit major listed below with a grade of "C" (2.0) or better in each course, general education requirements, and electives.

Required Courses

	Units
CHEM 1 & 2 —General Chemistry (5 & 5 units)	10
CHEM 3 & 4—Organic Chemistry (5 & 5 units)	10
BIO SC (any course except 48 or 98)	3 – 5
PHYS 2—Gen. Physics (Non-Calculus) (4 units)	
OR	
PHYS 6—Gen. Physics (Calculus) (4 units)	
OR	
PHYS 10—Descriptive Physics (4 units)	<u>4</u>
	27-29

CHEM 1

5 Units

General Chemistry (F/S)

Prerequisite: A grade of "C" or better in any of the following: MATH 104 or two years of high school algebra AND a grade of "C" or better in one of the following: CHEM 160 OR one year of high school chemistry. Course Advisories: SCC minimum English standard. CHEM 10 is strongly recommended for students who need additional preparation in problem solving. Presents principles of general chemistry for students in science, engineering, medical and related professions. Includes atomic structure and theory, the periodic table, bonding, gas laws, stoichiometry, solutions, ionization, thermochemistry and equilibrium. Written tests and quizzes, lab notebooks and reports, and a comprehensive lecture final will be used to evaluate student success. (CAN CHEM 2) (CHEM 1 & 2 = CAN CHEM SEQ A). Three hours lecture, six hours lab.

CHEM 2

5 Units

General Chemistry (F/S)

Prerequisite: CHEM 1 or equivalent with a grade of "C" or better. A continuation of chemical principles and theory covered in CHEM 1 with emphasis on electrochemistry, chemical equilibrium, and quantitative and qualitative analysis. (CAN CHEM 4) (CHEM 1 & 2 = CAN CHEM SEQ A). Three hours lecture, six hours lab.

CHEM 3

5 Units

Organic Chemistry I (F)

Prerequisite: CHEM 2 with a grade of "C" or better. Course Advisory: ENGL 1 is strongly recommended. First half of a two semester course (CHEM 3 and CHEM 4) that begins a survey of organic chemistry for students in chemical, biological, health science, and related professions. Includes analysis of structure and nomenclature, bonding, isomerism, and basic reaction mechanisms of organic chemicals. Functional groups considered include alkanes, alkenes, alkynes, alcohols, and alkyl halides. Basic organic laboratory procedures are introduced along with spectral analysis, simple syntheses, and reactions described in lecture. Written tests and quizzes, laboratory skills, accuracy of laboratory reports, and a comprehensive final exam will be used to evaluate student success. Four hours lecture, four hours lab.

<p>CHEM 4</p> <p>Organic Chemistry II (S) <i>Prerequisite:</i> CHEM 3 with a grade of "C" or better. Continuation of CHEM 3. Includes analysis of structure, nomenclature, and reaction mechanisms of conjugated systems, aromatics, organometallics, various functional groups, carbohydrates, lipids, amino acids, proteins, and nucleic acids. The laboratory will emphasize more advanced work and the application of instrumentation in organic chemistry. Written tests and quizzes, laboratory skills, accuracy of laboratory reports, and a comprehensive final exam will be used to evaluate student success. <i>Four hours lecture, four hours lab.</i></p>	<p>5 Units</p>	<p>CHEM 11</p> <p>Basic Organic Chemistry & Biochemistry (F/S) <i>Prerequisite:</i> A grade of "C" or better in CHEM 10 or CHEM 1. <i>Course Advisory:</i> SCC minimum English standard. Presents an overview of organic chemistry and biochemistry for majors in nursing, home economics, liberal arts and technical fields. Written quizzes and tests which include essay questions, accuracy of laboratory reports and skills, and a comprehensive final exam will be used to evaluate student success. (CAN CHEM 8) (CHEM 10 & 11 = CAN CHEM SEQ B). <i>Three hours lecture, three hours lab.</i></p>	<p>4 Units</p>
<p>CHEM 5</p> <p>Quantitative Analysis (On demand) <i>Prerequisite:</i> A grade of "C" or better in CHEM 2. <i>Course Advisory:</i> ENGL 1 is <u>strongly recommended</u>. A study of quantitative principles including the theory and applications associated with gravimetric, volumetric, and instrumental techniques. Quantitative reasoning, written and verbal communication skills and development of precise laboratory techniques are emphasized. Verbal and written reports and tests, accuracy of laboratory reports, and laboratory skills will be used to evaluate student success. (CAN CHEM 12). <i>Two hours lecture, eight hours lab.</i></p>	<p>4 Units</p>	<p>CHEM 49H</p> <p>Chemistry Honors <i>Prerequisites:</i> Eligibility for Honors Program; CHEM 1, CHEM 2, CHEM 3, CHEM 4, CHEM 5, CHEM 10, or CHEM 11 (any of these courses may be taken concurrently). Requires approval of a faculty member sponsor and the Dean of the Math-Science Division. <i>Course Advisory:</i> Eligibility for ENGL 1. Requires students to engage in an independent student project. The project may be a laboratory or library study that leads to a thesis. In all cases, the final written project should show integration and synthesis of ideas. <i>Three to nine hours weekly by arrangement.</i></p>	<p>1-3 Units</p>
<p>CHEM 10</p> <p>Intermediate Chemistry (F/S) <i>Prerequisites:</i> A grade of "C" or better in CHEM 160 or two semesters of high school chemistry, <u>and</u> a grade of "C" or better in MATH 104 or two years of high school algebra. <i>NOTE:</i> Not open for credit to students who have completed CHEM 1. <i>Course Advisory:</i> SCC minimum English standard. A general chemistry course often required for students transferring to four year college nursing programs and for students majoring in physical therapy, occupational therapy, industrial technology and home economics, it emphasizes the chemistry of inorganic compounds and covers selected topics such as atomic theory, bonding, equations, gas laws, solutions, acid-base theory, and oxidation-reduction. Written quizzes and a comprehensive lecture final which include essay questions and problem solving will be used to evaluate student success. (CAN CHEM 6) (CHEM 10 & 11 = CAN CHEM SEQ B). <i>Three hours lecture, three hours lab.</i></p>	<p>4 Units</p>	<p>CHEM 97</p> <p>Special Projects <i>Prerequisite:</i> CHEM 2 with a grade of "C" or better. An independent laboratory project designed to increase a student's laboratory and reporting skills. Completion of chemical analyses and a written report are required. May be repeated to a maximum of 6 units, including initial enrollment. <i>Three to nine hours weekly by arrangement.</i></p>	<p>1-3 Units</p>
		<p>CHEM 160</p> <p>Introductory Chemistry (F/S) <i>Prerequisite:</i> A grade of "C" or better in any of the following: MATH 104 or two years of high school algebra. <i>Course Advisory:</i> SCC minimum English standard. An introductory course covering the fundamental principles of inorganic chemistry. Tests which include problem solving and essay questions will be used to evaluate student success. <i>NOTE:</i> Not open to students who have completed CHEM 1, CHEM 10, or equivalent. <i>Three hours lecture, three hours lab.</i></p>	<p>4.0 Units</p>
		<p>Special Topics These courses, numbered 48, 98, or 148 depending upon their transferability, are courses of contemporary interest centered on changing knowledge and important issues in the field. Announcement of Special Topics courses appears in the Schedule of Classes.</p>	