

# Chemistry

---

## Chemistry

### 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 26-30 unit major listed below, general education requirements, and electives. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

### Program Outcomes

Students who complete the Chemistry Associate Degree will be able to:

1. Interpret and analyze chemical data.
2. Apply chemical bonding knowledge to structural analysis.
3. Construct balanced equations for chemical reactions.
4. Develop various lab techniques.
5. Formulate and write names for chemical compounds.
6. Analyze chemical problems.

REQUIRED COURSES.....	Units
CHEM 001 General Chemistry.....	5
CHEM 002 General Chemistry.....	5
CHEM 003 Organic Chemistry I.....	5
CHEM 004 Organic Chemistry II.....	5
BIO (any course except 048 or 098).....	3 - 5
PHYS 002 General Physics (Non-calculus).....	5
OR	
PHYS 006 Physics for Science and Engineering .....	5
OR	
PHYS 010 Descriptive Physics .....	3
<b>Total Units .....</b>	<b>26 – 30</b>

---

### CHEM 001

#### General Chemistry

*Prerequisite:* A minimum grade of C in both CHEM 160 and MATH 104. *Course Advisory:* CHEM 010 is strongly recommended for students who need additional preparation in problem solving; SCC minimum English standard. Presents principles of general chemistry for students in science, engineering, medical and related professions. Topics include atomic structure and theory, the periodic table, bonding, gas laws, stoichiometry, solutions, ionization, thermochemistry and equilibrium. This course requires significant math skills and previous knowledge of fundamental chemistry concepts. Field trips and online work may be required. *Three hours lecture, six hours lab.*

**5.0 Units**

### CHEM 002

#### General Chemistry

*Prerequisite:* CHEM 001 with a minimum grade of C. A continuation of chemical principles and theory covered in CHEM 001 with emphasis on electrochemistry, chemical equilibrium, acid-base equilibrium, thermodynamics, descriptive chemistry and quantitative and qualitative analysis. This course requires significant math skills and previous knowledge of fundamental chemistry concepts. Field trips and online work may be required. *Three hours lecture, six hours lab.*

**5.0 Units**

# Chemistry

---

**CHEM 003****5.0 Units****Organic Chemistry I**

*Prerequisite:* CHEM 002 with a minimum grade of C. *Course Advisory:* Eligibility for ENGL 001. First half of a two semester course sequence (CHEM 003 and CHEM 004) that begins a survey of organic chemistry for students in chemical, biological, health science, and related professions. Topics include 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 and ethers. Basic organic laboratory procedures are introduced along with spectral analysis, simple syntheses, and reactions described in lecture. Field trip may be required. Online homework and quizzes may be required. C-ID CHEM 150; (CHEM 003 + 004) C-ID CHEM 160S. *Four hours lecture, four hours lab.*

**CHEM 004****5.0 Units****Organic Chemistry II**

*Prerequisite:* CHEM 003 with a minimum grade of C. Second half of a two semester course sequence (CHEM 003 and CHEM 004). *Course Advisory:* Eligibility for ENGL 001. Topics include analysis of structure, nomenclature, and reaction mechanisms of conjugated systems, aromatics, organometallics, aldehydes, ketones, amines, carboxylic acids and acid derivatives, and 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. Field trip may be required. Online homework and quizzes may be required. C-ID (CHEM 003 + 004) CHEM 160S. *Four hours lecture, four hours lab.*

**CHEM 010****4.0 Units****Intermediate Chemistry**

*Prerequisite:* CHEM 160 with a minimum grade of C and a minimum grade of C in MATH 104 or MATH 114. *Course Advisory:* Eligibility for English 001. A general chemistry course often required for nursing students and for students majoring in physical therapy, occupational therapy, and industrial technology, 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. *Field trip may be required. Online homework may be required. NOTE: Not open for credit to students who have completed CHEM 001. Three hours lecture, three hours lab.*

**CHEM 011****4.0 Units****Basic Organic Chemistry & Biochemistry**

*Prerequisite:* CHEM 010 or CHEM 001 with a minimum grade of C. *Course Advisory:* Eligibility for English 001. Presents an overview of organic chemistry and biochemistry for majors in nursing, liberal arts and technical fields. *Field trip may be required. Online work may be required. Three hours lecture, three hours lab.*

**CHEM 012****5.0 Units****Chemistry for the Health Sciences**

*Prerequisite:* CHEM 160 with a minimum grade of C, or two semesters of high school chemistry, and a minimum grade of C in MATH 104 or MATH 114 or the equivalent or two years of high school algebra. *Course Advisory:* Eligibility for English 001. This course presents an overview of general, organic chemistry, and biochemistry for majors in nursing and other allied health occupations. Topics covered include chemical bonding, chemical equations, gas laws, solutions, acid-base theory, oxidation-reduction, functional groups and properties of organic compounds, and the structure and function of carbohydrates, lipids, proteins, and nucleic acids. These topics are discussed in the context of cellular metabolism and human health. This course is not a prerequisite for any chemistry course. Field trip may be required. Online homework may be required. **NOTE:** Not open for credit to students who have completed CHEM 011. Formerly CHEM 051. *Three hours lecture, six hours lab.*

**CHEM 160****4.0 Units****Introductory Chemistry**

*Prerequisite:* A minimum grade of C in any of the following: MATH 104 or MATH 114 or two years of high school algebra. *Course Advisory:* SCC minimum English standard. An introductory course covering the fundamental principles of inorganic chemistry. *Field trips may be required. Online work may be required. NOTE: Not open to students who have completed CHEM 001, CHEM 010, or equivalent. Three hours lecture, three hours lab.*