

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

AND

CHEM 002 General Chemistry 5

CHEM 003 Organic Chemistry I 5

AND

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

Total Units 26 - 30

CHEM 001

5.0 Units

General Chemistry

Prerequisite: A minimum grade of C in any of the following: MATH 104 or two years of high school algebra AND a minimum grade of C in one of the following: CHEM 160 OR one year of high school chemistry. Course Advisory: Eligibility for English 001 and CHEM 010 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. Topics include atomic structure and theory, the periodic table, bonding, gas laws, stoichiometry, solutions, ionization, thermochemistry and equilibrium. Field trips may be required. Some online work may be required. *Three hours lecture, six hours lab.*

CHEM 002

5.0 Units

General Chemistry

Prerequisite: CHEM 001 with a minimum grade of C. Course Advisory: Eligibility for English 001. A continuation of chemical principles and theory covered in CHEM 001 with emphasis on electrochemistry, chemical equilibrium, and quantitative and qualitative analysis. Field trips may be required. Online work may be required. *Three hours lecture, six hours lab.*

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

Prerequisite: CHEM 002 with a minimum grade of C.

Course Advisory: English 001 is strongly recommended.

First half of a two semester course (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. Basic organic laboratory procedures are introduced along with spectral analysis, simple syntheses, and reactions described in lecture. Field trip may be required. Online homework may be required. *Four hours lecture, four hours lab.*

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

Prerequisite: CHEM 003 with a minimum grade of C.

Course Advisory: Eligibility for English 001. A

continuation of CHEM 003, topics include 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. Field trip may be required. Online homework may be required. *Four hours lecture, four hours lab.*

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

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 two years of high school algebra. *Course Advisory:* Eligibility for English 001. A general chemistry course often required for nursing students 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. 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, home economics, liberal arts and technical fields. Field trip may be required. Online work may be required. *Three hours lecture, three hours lab.*

CHEM 051**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. *Three hours lecture, six hours lab.*

CHEM 098

These courses, numbered 048, 098, 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.

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.*