

## Chemistry (CHEM)

### **CHEM 1050 Chemistry in the Everyday World**

**3 Credits**

This course develops and applies chemical concepts to show the importance and relevance of chemistry in our daily lives. Areas of focus include using the scientific method, atomic and molecular structure, chemical and physical changes, phases of matter, acids and bases, polymers, food chemistry, and consumer chemistry. This course is recommended for non-science majors in the fields of education, health/medical, business, and the humanities.

(5 contact hours: 2 lecture, 3 lab)

### **CHEM 1100 Elementary Chemistry I: Intro to Inorganic Chemistry**

**4 Credits**

*Prerequisite: MATH 0850 or MATH 1400; or placement test into MATH 0950 or placement test into MATH 1650.*

This course, the first in a two-course sequence, introduces students to the fundamentals of beginning chemistry, including matter and energy, measurements, atomic and electronic structure, the periodic table, inorganic nomenclature, quantitative aspects of matter, stoichiometry, bonding, solutions, and acids and bases. Students will complete lab experiments related to these topics. This course is recommended for CCP students and non-science majors, especially those entering the health sciences and nursing.

(6 contact hours: 3 lecture, 3 lab)

### **CHEM 1150 Elementary Chemistry II: Intro to Organic and Biochemistry**

**4 Credits**

*Prerequisite: CHEM 1100.*

This course, the second of a two-course sequence, focuses on the fundamentals of organic and biochemistry for specific application to the health sciences. The chemistry of key functional groups in organic molecules, such as alkanes, alkenes, alcohols, ketones, aldehydes, carboxylic acids, amides, and esters, is studied and then applied to carbohydrates, fats, proteins and enzymes, the process of digestion, and metabolism. Related laboratory work is designed to reinforce concepts. This course is recommended for non-science majors.

(6 contact hours: 3 lecture, 3 lab)

### **CHEM 1500 General Chemistry I**

**(TAG) 5 Credits**

*Prerequisite: CHEM 1100 or high school chemistry, MATH 1650 (can be taken concurrently) or its equivalent or placement test into MATH 1700.*

This course focuses on the principles of college chemistry, including measurements and dimensional analysis, formulas, equations and stoichiometry, solution reactions, gas laws, thermochemistry, atomic and electronic structure, the periodic table, bonding, and molecular geometry. Students will complete lab experiments related to these topics. This course is recommended for students who are pursuing an associate degree, or who are science-engineering majors, or who are attempting to qualify for a career in a health field such as physical therapy.

(7 contact hours: 4 lecture, 3 lab)

### **CHEM 1600 General Chemistry II**

**5 Credits**

*Prerequisite: CHEM 1500.*

This course continues the study of the principles of college chemistry, including organic nomenclature, solids and liquids, solutions, chemical kinetics, molecular equilibrium, acid-base theory, acid-base equilibrium, precipitation and complex ion equilibrium, oxidation-reduction, and electrochemistry. Students will complete lab experiments related to these topics. This course is recommended for students who are pursuing an associate degree, or who are science-engineering majors, or who are attempting to qualify for a career in a health field such as physical therapy.

(7 contact hours: 4 lecture, 3 lab)

### **CHEM 2000 Quantitative Analysis**

**5 Credits**

*Prerequisite: CHEM 1600.*

This course focuses on the principles of quantitative chemical analysis including statistics, sampling techniques, acid-base equilibria and titrations, solubility calculations, complexometric titrations, oxidation-reduction titrations and gravimetric/volumetric methods. Additionally, the course introduces students to instrumental methods such as UV-visible spectroscopy, atomic absorption spectroscopy and chromatography. Students will complete lab experiments related to these topics. This course is intended for chemistry majors and chemical technician students.

(9 contact hours: 3 lecture, 6 lab)

### **CHEM 2500 Organic Chemistry I**

**5 Credits**

*Prerequisite: CHEM 1600.*

This specialized course is the first in an organic chemistry sequence. It focuses on basic relationships between structure and physical, chemical and spectral properties for organic compounds, including alkanes, alkenes, alkynes, aromatics, halides, alcohols, and ethers. The course covers free radical substitution, electrophilic addition, elimination, electrophilic aromatic substitution and nucleophilic substitution reactions, with emphasis on mechanisms and stereochemistry. It also introduces infrared and nuclear magnetic resonance spectroscopy and mass spectrometry. Laboratory work emphasizes basic skills such as recrystallization, extraction, distillation, chromatography synthesis, and analysis using chemical and instrumental methods. This course is intended for chemistry majors and chemical technician, pre-medical, pre-dental, and pharmacy students.

(9 contact hours: 3 lecture, 6 lab)

**CHEM 2600 Organic Chemistry II****5 Credits***Prerequisite: CHEM 2500.*

This course continues the organic chemistry sequence. It emphasizes organic synthesis, structure determination, stereochemistry, spectroscopy, reaction mechanisms, and the use of the chemical literature. It covers aldehydes, ketones, carboxylic acids, amines, amides, esters, polymers, fats, amino acids, carbohydrates and proteins. Students will study nucleophilic acyl substitution, nucleophilic addition, carbanions, and polymerization mechanisms. Related laboratory experience emphasizes more advanced synthetic and analytical procedures, using both macro and micro techniques. This course is intended for chemistry majors and chemical technician, pre-medical, pre-dental, and pharmacy students.

(9 contact hours: 3 lecture, 6 lab)

**CHEM 2900 Special Topics in Chemistry****1-5 Credits**

These specialized courses provide in-depth examinations of topics not covered in detail elsewhere in the curriculum. Students will study such subjects as polymers, chromatography, or spectroscopy and will complete lab experiments related to these topics.

(1-5 contact hours)