CHEMISTRY (CHEM)

CHEM 100 - FOUNDATIONS OF CHEMISTRY
This course covers some fundamentals of chemistry: properties of matter, units and unit conversations, chemical bonding, stoichiometry, thermochemistry. The focus will be on concepts, skills, and abilities needed for success in subsequent chemistry courses. This course is appropriate for non-scientists and science majors with little or no chemistry background, or who need additionally assistance with math concepts. It meets the university general education requirement for natural science. Not for major credit in the sciences.
Credits: 3
Attributes: Natural Science
Prerequisites: MATH 010 (may be taken concurrently) or MATH 021 (may be taken concurrently)
Course Notes: Not for major credit in Chemistry or Biology.

CHEM 201 - GENERAL CHEMISTRY I
Stoichiometry, atomic structure, chemical periodicity, chemical bonding, properties of matter, and thermochemistry. Laboratory required.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: MATH 121 (may be taken concurrently)

CHEM 202 - GENERAL CHEMISTRY II
Solutions, chemical kinetics, chemical equilibrium, acid-base theory, solubility products, complexation, and electrochemistry. Laboratory required.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: CHEM 201 and MATH 121

CHEM 210 - SURVEY OF ORGANIC CHEMISTRY
An overview of organic chemistry for students who need only one semester of organic chemistry. This course will explain basic concepts of organic chemistry, including nomenclature, structure (including stereochemistry), reactions, reaction mechanisms, and synthetic uses of alkenes, alkynes, alkyl halides, alcohols, amines, carbonyl compounds, aromatic compounds, and organometallic compounds, as well as peptide and protein chemistry. Laboratory experiments on these topics are an integral part of the course.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: CHEM 201 and CHEM 202

CHEM 211 - ORGANIC CHEMISTRY I
This represents the first part of a two-semester sequence. Laboratory experiments represent an integral part of this course. Students will learn basic concepts of organic chemistry: nomenclature, structures (including stereochemistry) and reactions of alkenes, alkynes, alkyl halides (electrophilic addition, nucleophilic substitution and elimination, etc) and alcohols. Students will understand electron delocalization, organic acid and bases, and be able to perform basic laboratory procedures: synthesis, purification, and identification of organic compounds.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: CHEM 201 and CHEM 202

CHEM 212 - ORGANIC CHEMISTRY II
This represents the second part of two-semester sequence. Laboratory experiments represent an integral part of this course. Students will extend their knowledge of basic concepts of organic chemistry, including the structure, reaction mechanisms, and synthetic uses of a variety of organic molecules, including alcohols, amines, and carbonyl, aromatic, and organometallic compounds. The laboratory includes the synthesis, purification, and identification of organic compounds as well as instrumental methods in organic chemistry.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: CHEM 211 and CHEM 202 and CHEM 201

CHEM 313 - ADVANCED ORGANIC CHEMISTRY LAB
Spectrometric methods for determining the structures of organic compounds. Mass spectrometry, proton and carbon FT-NMR, infrared, ultraviolet, and visible spectroscopy. Laboratory includes synthesis of organic compounds and applied spectroscopic methods.
Credits: 2,3
Attributes: Lab Course, Natural Science
Prerequisites: CHEM 212 and CHEM 202
Course Notes: Lecture and Lab course

CHEM 336 - ANALYTICAL CHEMISTRY
Overview of analytical chemistry including classical methods for quantitative chemical analysis and instrumental analysis. Topics include statistical treatment of data and mathematical treatment of acid-base, solubility, complexometric, and electrochemical equilibria. Also covered are theories and techniques of instrumental methods of analysis including ultraviolet-visible and fluorescence spectroscopy, atomic absorption, gas and liquid chromatography, and mass spectrometry. Required laboratory provides experience in all of these techniques to analyze a variety of samples.
Credits: 2,3
Prerequisites: CHEM 201 and CHEM 202 and CHEM 211
Course Notes: Lecture and Lab course

CHEM 352 - MEDICINAL CHEMISTRY
Chemistry and pharmacology of the principal classes of drugs; history of the development of medicinal chemistry; mechanisms of drug action; relationships between molecular structure and biological activity; the literature of medicinal chemistry; evaluation of potential drugs; perspective on the design of new drugs.
Credits: 3
Attributes: Natural Science
Prerequisites: CHEM 202 and CHEM 212

CHEM 392 - RESEARCH IN CHEMISTRY
Independent science laboratory research experience under the guidance of a faculty researcher; 1 to 3 semester hours total may be applied toward the BS degree. Students may register in consecutive semesters.
Credits: 1-3
Attributes: Natural Science
Course Notes: Consent of instructor. $100 per semester hour., Students must arrange for independent laboratory research, experience with a science faculty member, prior to registration.

CHEM 395 - INDEPENDENT STUDY
Independent library research culminating in a formal review paper on a topic approved by the instructor.
Credits: 1-3
Attributes: Natural Science
Course Notes: Consent of instructor, Students must arrange for a library independent study, with an instructor prior to registration;, may register for only 1 SH per semester up to two semesters.