

CHEMISTRY (CHE)

CHE 102. Chemistry For The Citizen. (3 Units)

A non-mathematical treatment of the basic principles of chemistry and their application to various facets of life in a highly technological society.

CHE 103. Chemistry Lab for the Citizen. (1 Unit)

Recommended general education course for students interested in the chemistry of everyday life. Includes determining the composition of foods and drugs, measurements, unit conversions, scientific notation, chemical representations, mole concept, structure of atoms and molecules. Three hours of laboratory per week.

CHE 108. Introduction to College Chemistry. (5 Units)

Measurements, units, unit conversion, scientific notation, chemical stoichiometry, mole concept, structure of atoms and molecules. CR/NC grading. Three hours of lecture and six hours of laboratory per week.

CHE 110. General Chemistry I. (5 Units)

Prerequisites: CHE 108 or high school chemistry and satisfactory performance on the General Chemistry Placement test. Chemical stoichiometry, atomic structure, periodic table, quantum theory, gases, thermochemistry, ionic bonding, Lewis formulas, liquids, solids, solutions. Four hours of lecture and three hours of laboratory per week.

CHE 112. General Chemistry II. (5 Units)

Prerequisite: CHE 110. Chemical kinetics, equilibria, thermodynamics, acids and bases, solubility, electrochemistry, covalent bonding, transition metal complexes. Four hours of lecture and three hours of laboratory per week.

CHE 230. Quantitative Analysis. (4 Units)

Prerequisite: CHE 112. Introduction to the techniques and theory of gravimetric and volumetric analyses, colorimetry, flame photometry and electroanalytical procedures. Two hours of lecture and six hours of laboratory per week. Laboratory fee required.

CHE 300. Organic Chemistry I. (3 Units)

Prerequisite: CHE 112 or 1 year of general chemistry. A detailed study of organic molecular structure, reaction mechanisms stereochemistry, and synthesis with emphasis on a aliphatic and aromatic systems.

CHE 301. Organic Chemistry Lab I. (1 Unit)

Prerequisites: CHE 112 or 1 year of general chemistry; concurrent enrollment in CHE 300. Basic experimental techniques of organic chemistry. Three hours of laboratory per week.

CHE 302. Organic Chemistry II. (3 Units)

Prerequisites: CHE 300 and CHE 301. Concurrent enrollment in CHE 303. Continuation of CHE 300 with emphasis on the chemistry of organic compounds containing oxygen and nitrogen.

CHE 303. Organic Chemistry Lab II. (1 Unit)

Prerequisites: CHE 112 or 1 year of general chemistry; concurrent enrollment in CHE 302. Preparation of organic compounds and qualitative organic analysis. Three hours of laboratory per week.

CHE 310. Organic Chemistry I. (4 Units)

Prerequisites: CHE 112; concurrent enrollment in CHE 311. Systematic study of organic compounds, with emphasis on molecular structure and reaction mechanisms; stereochemistry; aliphatic compounds.

CHE 311. Organic Chemistry Lab I. (1 Unit)

Prerequisite: Concurrent enrollment in CHE 310. Techniques of separation and purification of organic compounds. Introduction to organic synthesis. Three hours of laboratory per week. Fee required.

CHE 312. Organic Chemistry II. (3 Units)

Prerequisites: CHE 310, CHE 311; concurrent enrollment in CHE 313. A continuation of CHE 310 with emphasis on aromatic systems. Introduction to spectroscopy. Structures and reactions of organic compounds containing oxygen and nitrogen.

CHE 313. Organic Chemistry Laboratory II. (2 Units)

Prerequisites: CHE 310, CHE 311; concurrent enrollment in CHE 312. Organic synthesis, introduction to spectroscopy. Qualitative organic analysis. Six hours of laboratory per week. Fee required.

CHE 316. Survey of Organic Chemistry. (3 Units)

Prerequisite: CHE 112 and concurrent enrollment in CHE 317. Structure and properties of aliphatic and aromatic compounds. Stereochemistry and functional group chemistry. Oriented toward life sciences and related areas.

CHE 317. Survey of Organic Chemistry Laboratory. (1 Unit)

Co-requisite: CHE 316. Basic purification processes and techniques of separation of mixtures. Preparation of organic compounds. Introduction to qualitative and quantitative analytical methods, including chemical, chromatographic, and spectroscopic procedures. Three hours of laboratory per week. Fee required.

CHE 320. Physical Chemistry I. (5 Units)

Prerequisites: CHE 112 and CHE 230; MAT 193; PHY 132. PHY 122 may be substituted for PHY 132 by students in the biochemistry option and by non-chemistry majors, with consent of instructor. Principles and applications of classical thermodynamics and chemical kinetics. Introduction to computer based techniques of treating scientific data.

CHE 322. Physical Chemistry II. (3 Units)

Prerequisite: CHE 320. Introduction to group theory, quantum chemistry, spectroscopy and statistical thermodynamics.

CHE 393. Supervised Projects. (1-3 Units)

Prerequisites: CHE 112 and consent of instructor. Laboratory projects to be carried out under the supervision of a chemistry faculty member. Designed for students of sophomore and junior standing. CR/NC grading. Repeatable course. Three to nine hours of laboratory per week.

CHE 420. Advanced Applic for Chemistry. (2 Units)

Prerequisite: CHE 320. Advanced applications for chemistry including computational techniques, molecular modeling, combinatorial approaches to synthesis, data acquisition and analysis, and use of computers to simulate spectral data. One hour of lecture and two hours of activity per week.

CHE 431. Adv Integrated Lab I Lec. (3 Units)

Prerequisites: CHE 230 and CHE 320. Experimental work involving instrumental analytical techniques, inorganic syntheses, physical measurements on chemical systems. Analysis of experimental data, including the use of computer techniques. One hour of lecture and six hours of laboratory per week.

CHE 433. Adv Integrated Lab II Lec. (3 Units)

Prerequisites: CHE 431 and CHE 322. A continuation of CHE 431. One hour of lecture and six hours of laboratory per week.

CHE 440. Inorganic Chemistry. (4 Units)

Prerequisite: CHE 322. Structural inorganic chemistry, coordination compounds, mechanisms of inorganic reactions, inorganic synthetic methods. Organometallic chemistry, catalysis.

CHE 450. Biochemistry I. (4 Units)

Prerequisites: CHE 230, CHE 312 and CHE 313, or CHE 316 and CHE 317, and concurrent enrollment in CHE 451. The chemistry of amino acids and proteins; the chemistry and metabolism of carbohydrates and lipids; energetics in living systems.

CHE 451. Biochemistry I Lab. (1 Unit)

Prerequisites: CHE 230, CHE 312, and CHE 313, or CHE 316 and CHE 317, and concurrent enrollment in CHE 450. Biochemistry laboratory experiments using advanced techniques for separation and analysis of biologically active compounds. Three hours of laboratory per week. Fee required.

CHE 452. Biochemistry II. (4 Units)

Prerequisite: CHE 450. Metabolism of nitrogenous compounds, discussion of nucleic acid structure/function and metabolic control.

CHE 453. Biochemistry II Lab. (2 Units)

Prerequisites: CHE 451 and concurrent enrollment in CHE 452. Biochemistry experiments using advanced techniques for the isolation and purification of macromolecules, and for determination of their activity or function. Six hours of laboratory per week.

CHE 456. Clinical Chemistry. (3 Units)

Prerequisites: CHE 450 and CHE 451. Methods of analysis of body fluids and tissues. Relation of analytical results to interpretation of metabolism and diagnosis of disease. Three hours of lecture and three hours of laboratory per week. Laboratory fee required.

CHE 458. Toxicology. (3 Units)

Prerequisites: CHE 450 is required; CHE 452 is recommended. Discussion of methods of introduction of toxic substances into the body, their metabolic transformations, and their biochemical and physiological effects. Examples drawn from forensic, clinical, occupational, and environmental sources.

CHE 460. Chemical Literature. (2 Units)

Prerequisites: CHE 312 and CHE 320. Chemical literature, including the nature, content, and accessibility. Modern electronic search and retrieval techniques. CR/NC grading.

CHE 474. Geochemistry. (3 Units)

Prerequisites: CHE 112 is required; EAR 356 is recommended. Factors controlling the distribution of the chemical elements in the earth, atmosphere and oceans. Methods in the analysis of minerals. Special consideration of economically important metals. Applications in earth sciences, chemistry, and environmental studies. Two hours of lecture and three hours of laboratory per week.

CHE 495. Selected Topics in Chemistry. (1-3 Units)

Prerequisite: Consent of instructor. Lectures on a specific area of current interest in chemistry, or advanced discussion of a selected topic in a limited field of chemistry. Repeatable course. One to three hours of lecture per week.

CHE 497. Directed Research. (1-3 Units)

Prerequisites: Senior standing and consent of instructor. Advanced laboratory work, with each student undertaking an independent and original investigation. CR/NC grading. Repeatable course. Three or nine hours of laboratory per week.

CHE 3011. Biochemistry (335.1). (1 Unit)

CHE 3012. Biochemistry (335.2). (1 Unit)

CHE 3013. Biochemistry (335.3). (1 Unit)

CHE 3014. Biochemistry (335.4). (1 Unit)