



Chemistry (CHEM)

Courses

CHEM 115. Introductory Chemistry. 4 Credits.

An introductory level course designed to be the first semester of the General, Organic and Biochemistry sequence, introducing fundamental concepts in chemistry. This course introduces topics of measurement, atomic theory, chemical bonding, ionic and covalent compounds, naming, shape, intermolecular forces, states of matter, stoichiometric relationships, solutions, reaction rates, equilibria, and acid-base chemistry. Includes a laboratory section.

Typically Offered: Fall, Spring, Summer.

CHEM 116. Introduction to Organic and Biochemistry. 4 Credits.

An introductory level course designed to be the second semester of the General, Organic and Biochemistry sequence, introducing organic chemistry and biochemistry. This course includes topics on functional groups, nomenclature, organic reactions, proteins, enzymatic action, carbohydrates, lipids, nucleic acids, and metabolism. Includes a laboratory section.

Typically Offered: Spring.

CHEM 121. General Chemistry I. 5 Credits.

A foundational chemistry course designed to be the first semester of the two-semester general chemistry sequence. This course covers topics of atomic structure, stoichiometric relationships, chemical reactions, gas laws, thermochemistry, bonding, and molecular geometry. Includes a laboratory section.

Typically Offered: Fall, Spring.

Prerequisites: Grade of C or better in ASC 93 or 94; or ACT score of 20 or higher; or MATH 103, MATH 105, MATH 107, MATH 110, or MATH 210.

CHEM 122. General Chemistry II. 5 Credits.

A beginning chemistry course designed to be the second semester of the two-semester general chemistry sequence. This course covers topics of physical states, solutions, reaction rates and mechanisms, chemical equilibrium, acid-base chemistry, thermodynamics, and electrochemistry. Includes a laboratory section.

Typically Offered: Spring.

Prerequisite: CHEM 121.

CHEM 194. Independent Study. 1-3 Credits.

Directed reading, study, and/or activities in selected topics.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.

CHEM 294. Independent Study. 1-3 Credits.

Directed reading, study, and/or activities in selected topics.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.

CHEM 299. Special Topics. 1-4 Credits.

Courses not offered in the regular catalog that provide an opportunity to extend student learning.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.

CHEM 330. Quantitative Analysis I. 4 Credits.

An upper-level one-semester course designed for students to apply concepts and solve analytical chemistry problems.

This course includes topics of statistical treatment of data and error analysis; solution chemistry and solubility equilibria; volumetric analyses: acid-base neutralization, complexometric and redox methods. Includes a laboratory section.

Typically Offered: Fall, odd years.

Prerequisite: CHEM 122.

CHEM 331. Quantitative Analysis II. 4 Credits.

An upper-level second semester of a two semester sequence designed for students to apply concepts and solve analytical chemistry problems. This course includes topics of statistical treatment of data and error analysis, gravimetric analyses, solution chemistry and solubility equilibria, volumetric analyses, acid-base neutralization, complexometric and redox methods. Includes a laboratory section.

Typically Offered: Spring, even years.

Prerequisite: CHEM 330.

CHEM 341. Organic Chemistry I. 5 Credits.

An upper-level course designed to be the first semester of a two-semester sequence covering organic chemistry.

This course covers topics of organic structure and bonding, nomenclature, stereochemistry, functional groups, reactivity, and spectroscopy. Includes a laboratory section.

Typically Offered: Fall, even years.

Prerequisite: CHEM 122.

CHEM 342. Organic Chemistry II. 5 Credits.

An upper-level course designed to be the second semester of a two-semester sequence covering organic chemistry. This course continues the study of organic structure and bonding, nomenclature, stereochemistry, functional groups, reactivity, and spectroscopy. Includes a laboratory section.

Typically Offered: Spring, odd years.

Prerequisite: CHEM 341.

CHEM 360. Elements of Biochemistry. 4 Credits.

An upper-level one-semester course designed to introduce students to biochemistry. This course covers topics of protein structure, function, conformation, and dynamics; biomolecules; enzymes, DNA-RNA; structure and flow of genetic information; biological membranes, and metabolism. Includes a laboratory section.

Typically Offered: Fall, odd years.

Prerequisite: CHEM 116 or CHEM 341.



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CHEM 394. Independent Study. 1-3 Credits.

Directed reading, study, and/or activities in selected topics.

Typically Offered: On sufficient demand.

Prerequisite: Junior Standing or Senior Standing.

Repeatable: Up to 12 Credits.

CHEM 395. Laboratory Preparation and Management. 1 Credit.

An opportunity to participate in a practicum-like course. The student directly assists the instructor in numerous aspects of laboratory instructional delivery. The course is designed to improve the competency of teaching laboratories by involving the students in preparation of laboratory materials, storeroom management, evaluation of laboratory experiences, chemical storage, waste disposal, and related safety topics. This course may be repeated for credit up to 3 semester credit hours.

Typically Offered: Fall, Spring.

Repeatable: Up to 3 Credits.

CHEM 399. Special Topics. 1-4 Credits.

Courses not offered in the regular catalog that provide an opportunity to extend student learning.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.

CHEM 411. Physical Chemistry I. 4 Credits.

A one semester course covering the study of the laws and theories of chemistry including statistical thermodynamics and quantum mechanics. Course materials are interpreted through the application of fundamental mathematical and physical principles. Statistical methods and concepts are introduced during the study of statistical mechanics. This course includes laboratory.

Typically Offered: Fall, even years.

Prerequisites: CHEM 122, MATH 165, and either PHYS 212 or PHYS 252.

CHEM 412. Physical Chemistry II. 4 Credits.

A one semester course covering the study of the laws and theories of chemistry including thermodynamics, phase equilibria, and kinetics. Course materials are interpreted through the application of fundamental mathematical and physical principles. Statistical methods and concepts are introduced during the study of the kinetic molecular theory of gases. This course includes laboratory.

Typically Offered: On sufficient demand.

Prerequisites: CHEM 122, MATH 165, and either PHYS 212 or PHYS 252.

CHEM 425. Inorganic Chemistry. 4 Credits.

A study of major topics in inorganic chemistry. The structure of crystalline solids, molecular symmetry, acids and bases, oxidation and reduction, and the chemistry of d-metal complexes will be covered. Topics in atomic and molecular structure and bonding as applied to inorganic molecules will also be discussed. The course includes laboratory.

Typically Offered: Spring, odd years.

Prerequisite: CHEM 122.

CHEM 490. Secondary Science Methods and Techniques. 3 Credits.

A course designed to prepare prospective chemistry teachers in the areas of curriculum planning, textbook selection, supplemental teaching aids, laboratory procedures, and the ordering of equipment and supplies. The course includes laboratory practicum experience.

Typically Offered: Fall, even years.

Prerequisite: Admitted to Teacher Education.

CHEM 491. Integrated Science Capstone. 2 Credits.

A capstone course that requires students to apply previously-learned knowledge and skills to develop solutions to practical scientific issues. Students will be divided into small groups for plan development. Various majors are involved to allow for integrated course material.

Typically Offered: Fall, Spring.

Prerequisite: Senior Standing.

Same As: BIOL 491/CHEM 491.

CHEM 494. Undergraduate Research. 3-12 Credits.

The course is designed to integrate subject matter from major coursework and other disciplines into a project that leads to the creation of an original body of knowledge.

Typically Offered: On sufficient demand.

Prerequisite: Junior Standing or Senior Standing.

Repeatable: Up to 12 Credits.

CHEM 497. Internship. 3-12 Credits.

An opportunity for students to apply classroom learning to an on-the-job work experience. Internship must be related to the student's major or minor course of study and may be in any geographic location. Credit is granted in the range of three to twelve hours per semester and may be repeated up to a maximum of 12 credit hours. Application and approval through Career Services.

Typically Offered: Fall, Spring, Summer.

Prerequisites: Junior Standing or Senior Standing and cum GPA of 2.50 or higher.

Grading: S/U only.

Repeatable: Up to 12 Credits.