CHEMISTRY (CHEM)

Courses
CHEM-050 PREPATORY CHEMISTRY 3.00 Credits
This class prepares students for CHEM-111. Emphasis on chemical problem solving and SI unit conversions. Other topics include: mole concept, chemical stoichiometry, chemical formulas, nomenclature, periodic table, equation balancing and molecular geometry. Pre-requisite: MATH-023 or MATH-025 or placement. Course fee.

CHEM-102 THE CHEMISTRY OF DAILY LIFE 4.00 Credits
From the food we eat to the medicines we take to the transportation we use, we experience chemistry every day. In this course, you will study the chemistry of everyday life with the goal of making informed consumer decisions. Pre-requisite: Completion of MATH-023 or MATH-025 or higher, excluding MTHPT-103P, MATH-153P and MATH-157P, or have satisfactory math placement scores into MATH-108 or higher.

CHEM-105 GENERAL, ORGANIC AND BIOCHEMISTRY 4.00 Credits
An introduction to chemistry with an emphasis on biochemistry for the health professions. Three lectures and one laboratory per week. Pre-requisite: Completion of MATH-023 or MATH-025 or higher, excluding MTHPT-103P, MATH-153P and MATH-157P, or have satisfactory math placement scores into MATH-108 or higher.

CHEM-111 PRINCIPLES OF CHEMISTRY I 4.00 Credits
A systematic and intensive treatment of chemical principles and their applications. Four hours of lecture/recitation, and one 3-hour laboratory per week. Pre-requisite: A grade of 'C' or better in MATH-108 or MATH-137 with a grade of C or better, or satisfactory math placement. Lab fee.

CHEM-112 PRINCIPLES OF CHEMISTRY II 4.00 Credits
Elementary theoretical chemistry and its application to analytical practice. Includes emphasis on intermolecular forces, equilibrium, electrochemistry and nuclear chemistry. Four hours of lecture/recitation and one 3-hour laboratory per week. Pre-requisite: CHEM-111 with a grade of C or better. Lab fee.

CHEM-190 DIRECTED STUDY IN CHEMISTRY 1.00-12.00 Credits
CHEM-192 SPECIAL TOPICS IN CHEMISTRY 1.00-12.00 Credits
CHEM-195 PRACTICUM IN CHEMISTRY 1.00-2.00 Credits
CHEM-290 DIRECTED STUDY IN CHEMISTRY 1.00-4.00 Credits
CHEM-291 WORKSHOP IN CHEMISTRY 1.00-4.00 Credits
CHEM-292 SPECIAL TOPICS IN CHEMISTRY 1.00-4.00 Credits
CHEM-295 PRACTICUM IN CHEMISTRY 1.00-2.00 Credits
CHEM-299 RESEARCH ASSISTANTSHIP 1.00-12.00 Credits

CHEM-305 PHYSICAL CHEMISTRY I 3.00 Credits
Properties of Matter, First and Second Laws of Thermodynamics, Equilibrium, Chemical Reactions, Solutions. Pre-requisite: A grade of 'C' or better in MATH-175.

CHEM-306 PHYSICAL CHEMISTRY II 3.00 Credits
Quantum theory, Atoms, Diatomic Molecules, Polyatomic Molecules, Chemical Kinetics, and Statistical Mechanics. Pre-requisite: CHEM-305 with a grade of C or better.

CHEM-325 QUANTITATIVE ANALYSIS 4.00 Credits
Theory and practice of classical gravimetric and volumetric chemical analyses with an introduction to instrumental techniques in the laboratory. Basic data handling and statistics, chemical equilibrium, electrochemistry. Three hours of lecture and one 4-hour laboratory per week. Pre-requisite: CHEM-112 with a grade of C or better. Lab fee.

CHEM-353 LABORATORY PREPARATION TECHNIQUES 2.00 Credits
Techniques of solution preparation, chemical storage and management, prevention of contamination, and quality assurance. One hour of lecture and one 3-hour laboratory per week. Pre-requisite: CHEM-325 with a grade of C or better.

CHEM-371 ORGANIC CHEMISTRY I 3.00 Credits
Principles and theories of organic chemistry and the properties, preparations, and reactions of organic compounds. Three hours of lecture per week. This is a writing integrated course. Pre-requisite: CHEM-112 with a grade of C or better.

CHEM-372 ORGANIC CHEMISTRY II 3.00 Credits
Continuation of Chemistry 371. Three hours of lecture per week. Pre-requisite: CHEM-371 with a grade of C or better.

CHEM-373 ORGANIC CHEMISTRY I LAB 1.00 Credit
Laboratory to accompany Chemistry 371. One 3-hour lab per week. Co-requisite: CHEM-371.

CHEM-376 ORGANIC CHEMISTRY II LAB 2.00 Credits
Laboratory to accompany CHEM-372. 3-hours of lab per week and information literacy. Pre-requisite: CHEM-371 and CHEM-373, with a grade of C or better. Co-requisite: CHEM-372. Lab fee.
CHEM-390 DIRECTED STUDY IN CHEMISTRY 1.00-4.00 Credits
CHEM-392 SPECIAL TOPICS IN CHEMISTRY 1.00-4.00 Credits
CHEM-394 INTERNSHIP IN CHEMISTRY 12.00 Credits
CHEM-395 PRACTICUM IN CHEMISTRY 1.00-2.00 Credits
CHEM-399 RESEARCH ASSISTANTSHIP 1.00-12.00 Credits

CHEM-454 INSTRUMENTAL ANALYSIS 4.00 Credits
Course covers the basic principles and use of instruments. Ultraviolet, visible, infrared, Raman, and atomic absorption spectroscopy. Electrochemistry. Pre-requisite: CHEM-325 with a grade of C or better. Lab fee.

CHEM-463 INORGANIC CHEMISTRY 4.00 Credits
Course covers the basic principles of descriptive chemistry, coordination chemistry, models of bonding in transition metal complexes, molecular symmetry, molecular orbital theory, spectroscopy, and organometallic chemistry. The laboratory component introduces the student to standard aspects of synthetic inorganic chemistry, bioinorganic chemistry, organometallic chemistry and catalytic chemistry. Pre-requisite: CHEM-112 with a grade of C or better. Lab fee.

CHEM-481 BIOCHEMISTRY I 4.00 Credits
A study of protein structures and functions and the basics of sugar and lipid protein analysis. Three hours of lecture and one 3-hour laboratory per week. Pre-requisite: CHEM-371 with a grade of C or better.

CHEM-482 BIOCHEMISTRY II 3.00 Credits
Functional continuation of CHEM-481. Lipid, amino acid and nucleotide metabolism. Emphasis is on regulation of metabolism, metabolic dysfunctions, biochemical mechanisms of hormone action, biochemical genetics, protein synthesis, and metabolic consequences of genetic defects. Three hours of lecture/discussion per week. Pre-requisite: CHEM-481 with a grade of C or better.

CHEM-490 DIRECTED STUDY IN CHEMISTRY 1.00-4.00 Credits
CHEM-491 WORKSHOP IN CHEMISTRY 1.00-4.00 Credits
CHEM-492 SPECIAL TOPICS IN CHEMISTRY 1.00-4.00 Credits
CHEM-494 INTERNSHIP IN CHEMISTRY 12.00 Credits
CHEM-495 PRACTICUM IN CHEMISTRY 1.00-2.00 Credits

CHEM-499 RESEARCH PROJECT AND SEMINAR IN CHEMISTRY 1.00-3.00 Credits
Students will conduct and communicate the results of a research project in the Natural Sciences Division. Topics may include the historical, philosophical, cultural and environmental aspects, and the processes of natural science. Requirements of students include satisfactory oral presentation and defense of their research and submission of a written report approved by their advisor to the Natural Sciences Division. Pre-requisite: NS-398.