

CHEMISTRY (CH)

CH 104 Introduction to Chemistry I (5 Credits)

Prerequisites: MTH 095 (or higher) or minimum placement Math Level 14. Introduces basic principles of general chemistry, including atomic theory, chemical formulas and equations, bonding, stoichiometry, acid/base chemistry, and solutions. Supporting laboratory work included. Not designed for science majors.

CH 105 Introduction to Chemistry II (5 Credits)

Prerequisites: CH 104.

Builds on concepts from CH 104 introducing basic principles of general and organic chemistry, including bonding in carbon compounds, equilibrium, stereochemistry and functional group chemistry. Supporting laboratory work included. Not designed for science majors.

CH 106 Introduction to Chemistry III (5 Credits)

Prerequisites: CH 105.

Builds on concepts from CH 105 introducing basic principles of general and biochemistry, including consideration of protein, carbohydrate and lipid structure and metabolism, bioenergetics, enzymes and nucleic acid chemistry.

CH 188 Special Studies: Chemistry (1-4 Credits)

Explores topics of current interest in the discipline.

CH 199 Selected Topics: Chemistry (1-5 Credits)

Provides a learning experience in chemistry not currently available; this course is in development to be proposed as a permanent course.

CH 221 General Chemistry I (5 Credits)

Prerequisites: MTH 111 or MTH 112, or MTH 251 (or higher) or minimum placement Math Level 20.

Explores experimental and theoretical principles of chemistry including matter, measurement, atomic structure, periodicity, stoichiometry, solutions, molecular structure, bonding, oxidation/reduction and thermochemistry. The course is algebra-based and includes supporting laboratory work. This course is appropriate for science and engineering majors. High school chemistry is recommended.

CH 222 General Chemistry II (5 Credits)

Prerequisites: CH 221.

This course builds on concepts from CH 221, by exploring experimental and theoretical principles of chemistry including gases, liquids, solids, solutions, kinetics, equilibrium, acids and bases. The course is algebra-based and includes supporting laboratory work. This course is appropriate for science and engineering majors.

CH 223 General Chemistry III (5 Credits)

Prerequisites: CH 222.

This course builds on concepts from CH 222 by exploring experimental and theoretical principles of chemistry including solubility equilibria, acid-base equilibria, electrochemistry, nuclear chemistry, metals and organic compounds. The course is algebra-based and includes supporting laboratory work. This course is appropriate for science and engineering majors.

CH 241 Organic Chemistry I (5 Credits)

Prerequisites: CH 223.

Builds on principles of general chemistry with an emphasis on the chemistry of carbon compounds for science and chemical engineering majors. Includes bond angles, molecular shape, Lewis structures, formal charge, electron orbitals, polar bonds, polar reactions, resonance, alkanes, alkenes, cycloalkanes, addition via carbocation, addition via cyclic intermediates, chirality, addition to alkynes, substitution, reaction mechanisms, and energy diagrams. The laboratory introduces standard lab techniques for separating, purifying and characterizing compounds on microscale and/or macroscale, while using record keeping methods acceptable in the discipline of chemistry.

CH 242 Organic Chemistry II (5 Credits)

Prerequisites: CH 241.

Introduces additional principles of organic chemistry for science and chemical engineering majors. Includes substitution reactions, elimination reactions, radical reactions, conjugation and molecular orbital theory, aromaticity, infrared spectroscopy, mass spectroscopy, nuclear magnetic resonance spectroscopy, and synthesis. The laboratory introduces derivatization reactions, the effect of solvents, and instrumental techniques while using record keeping techniques acceptable in the discipline of chemistry.

CH 243 Organic Chemistry III (5 Credits)

Prerequisites: CH 242.

Introduces additional principles of organic chemistry for chemistry, biology and chemical engineering majors. Includes electrophilic aromatic substitution, acidity and pKa of phenols, nucleophilic aromatic substitution, addition to a carbonyl, carboxylic acids and derivatives, enolate and enol nucleophiles, aldol and Claisen reactions and amines. The laboratory introduces synthetic methods and a synthesis project while using record keeping techniques acceptable in the discipline of chemistry.

CH 288 Special Studies: Chemistry (1-4 Credits)

Explores topics of current interest in the discipline.

CH 298 Independent Study: Chemistry (1-4 Credits)

Prerequisites: Instructor approval required.

Recommended preparation: Prior coursework in the discipline.

Individualized, advanced study in chemistry to focus on outcomes not addressed in existing courses or of special interest to a student. P/NP grading.

CH 299 Selected Topics: Chemistry (1-5 Credits)

Provides a learning experience in chemistry not currently available; this course is in development to be proposed as a permanent course.