

Chemistry (CHM) Courses

CHM1000 Foundations in Chemistry

This is a comprehensive course for those fields requiring knowledge of general chemical concepts. Emphasis is on applied areas of interest where aspects of atomic and molecular structure and function are particularly important. Topics covered include stoichiometry of chemical reactions, energy interrelationships between reactants, atomic structure and chemical bonding.

Prerequisite(s): MATH1020 or math placement, Corequisite: CHM1006.

Offered at Providence

3 Semester Credits

CHM1006 Foundations in Chemistry Laboratory

This is a laboratory companion course coordinated with CHM1000. Emphasis is on inquiry-based exercises that illustrate and demonstrate important skills and principles of theoretical chemistry and applied chemistry. Topics covered include stoichiometry of chemical reactions, energy interrelationships between reactants, atomic and molecular structure, and chemical bonding.

Prerequisite(s): MATH1020 or math placement, Corequisite: CHM1000.

Offered at Providence

1 Semester Credit

CHM1011 General Chemistry I

This is the first course in general chemistry. Students take an active-learning approach to the discovery of scientific measurements, atomic structure, stoichiometry, thermochemistry, electron configurations, bonding models for chemical compounds, VSEPR (Valence Shell Electron Pair Repulsion) and gases.

Prerequisite(s): MATH1020 or math placement, Corequisite: CHM1016.

Offered at Charlotte, Providence

3 Semester Credits

CHM1016 General Chemistry I Laboratory

General Chemistry I is a laboratory companion course coordinated with CHM1011 which introduces students to techniques and equipment used in experimental chemistry. Students take a guided inquiry-based approach to the discovery of the structure of atoms, scientific measurements, proper calculations of chemical reactions, thermochemistry, spectroscopy and the states of matter. Additionally, this laboratory course provides students with the opportunity to practice laboratory safety, design experimental procedures, collect data, analyze results and discuss conclusions.

Prerequisite(s): MATH1020 or math placement, Corequisite: CHM1011.

Offered at Charlotte, Providence

1 Semester Credit

CHM1022 General Chemistry II

This course is the second course in general chemistry. Students take an integrated learning approach to the discovery of intermolecular forces, properties of solutions, kinetics, equilibria, acid/base chemistry and electrochemistry.

Prerequisite(s): CHM1011, CHM1016, MATH1030, Corequisite: CHM1026.

Offered at Charlotte, Providence

3 Semester Credits

CHM1026 General Chemistry II Laboratory

This is a laboratory companion course coordinated with CHM1022 that introduces students to techniques and equipment used in experimental chemistry. Students take an inquiry-based, self-guided learning approach to the discovery of acid-base reactions, calculations of chemical equilibrium, investigations into the structure of solids and liquids, behavior of gases under various conditions, and calculations of solution concentrations. Students also identify, when appropriate, the application of Green Chemistry procedures. Additionally, this laboratory course provides students with the opportunity to practice laboratory safety, design experimental procedures, collect data, analyze results and discuss conclusions.

Prerequisite(s): CHM1011, CHM1016, MATH1030, Co-requisite: CHM1022.

Offered at Charlotte, Providence

1 Semester Credit

CHM2011 Organic Chemistry I

This is the first course in the sequence of organic chemistry. In this course, students investigate carbon and its role in the formation of biomolecules. Emphasis is given to the classification of carbon-based reactions, naming of carbon-based compounds (alkanes, alkenes and alkynes), stereochemistry and spectroscopy.

Prerequisite(s): CHM1022, CHM1026, Corequisite: CHM2016.

Offered at Charlotte, Providence

3 Semester Credits

CHM2016 Organic Chemistry I Laboratory

This is a laboratory companion course coordinated with CHM2011 Organic Chemistry I that introduces students to techniques and equipment used in experimental organic chemistry. Students use an inquiry-based approach to the discovery of the synthesis of organic compounds, compound characterization using analytical techniques, and the development and evaluation of separation protocols. Students also identify, when appropriate, the application of Green Chemistry procedures. Additionally, this laboratory course provides students with the opportunity to practice laboratory safety, design experimental procedures, collect data, analyze results and discuss conclusions.

Prerequisite(s): CHM1022, CHM1026, Corequisite: CHM2011.

Offered at Charlotte, Providence

1 Semester Credit

CHM2022 Organic Chemistry II

This course is a continuation of CHM2011 Organic Chemistry I. Emphasis is given to substitution and elimination reactions, alcohols, phenols, ethers and their sulfide derivatives, aldehydes, ketones, carboxylic acids and their derivatives, aromatic systems, amines, amides, construction of carbohydrates, amino acids, and lipids.

Prerequisite(s): CHM2011, CHM2016, Corequisite: CHM2026.

Offered at Charlotte, Providence

3 Semester Credits

CHM2026 Organic Chemistry II Laboratory

This is a laboratory companion course coordinated with CHM2022 Organic Chemistry II, which introduces students to techniques and equipment used in experimental organic chemistry. Students take an inquiry-based approach to the discovery of reactions that produce alcohols, aldehydes, carboxylic acids, ethers, esters, amines, amides, phenols, and aromatic compounds. Emphasis is given to proper synthesis and analytical evaluation of chemical reaction products. Students also identify, when appropriate, the application of Green Chemistry procedures. Additionally, this laboratory course provides students with the opportunity to practice laboratory safety, design experimental procedures, collect data, analyze results and discuss conclusions.

Prerequisite(s): CHM2011, CHM2016, Corequisite: CHM2022.

Offered at Charlotte, Providence

1 Semester Credit

CHM2040 Introduction to General and Organic Chemistry

This course examines the chemistry of carbon-containing molecules relevant to biological systems such as the human body, beginning with basic atomic structure, chemical bonding and reactions, and the chemistry of acids, bases, buffers and salts. Organic chemistry of all functional groups are examined, including saturated/unsaturated hydrocarbons, aldehydes and ketones, carboxylic acids, amines and alcohols. Emphasis is given to those compounds of biochemical importance.

Offered at Charlotte, Providence

3 Semester Credits

CHM2050 Introduction to Organic Chemistry

This course is a one-term overview of organic chemistry intended for students in the health science fields. Nomenclature, properties and reactivity are covered for major organic functional groups, including alkanes, alkenes, alkynes, aromatics, aldehydes and ketones, carboxylic acids, amines, amides, alcohols, thiols, and sulfides. Emphasis is on those compounds, reactions and properties of biochemical importance.

Prerequisite(s): CHM1000, CHM1006 or CHM1022, CHM1026.

Offered at Charlotte, Providence

3 Semester Credits

CHM2056 Introduction to Organic Chemistry Laboratory

This is a laboratory companion course coordinated with Introduction to Organic Chemistry. Emphasis is on inquiry-based exercises that illustrate and demonstrate important skills and principles of organic chemistry. Topics include solubility properties, basic organic chemistry laboratory techniques (including extraction and chromatography), and organic reactions with particular focus on those of interest to students in the nutrition and health science fields. Throughout this course, an evidence-based approach to exploration of organic laboratory experiments that are of interest to students in the nutrition and health science fields is emphasized.

Prerequisite(s): CHM1000, CHM1006, or CHM1022, CHM1026, Corequisite: CHM2050.

Offered at Charlotte, Providence

1 Semester Credit

CHM3040 Biochemistry

Biochemistry applies the knowledge gained in general and organic chemistry to biological systems with emphasis on applications of chemistry to animal biology, structure of biological molecules, and metabolism. Students gain an understanding of enzymatic kinetics, acid/base chemistry, enzymatic kinetics, metabolic pathways, applications to research and disease pathways, energy production, and metabolic regulatory mechanism in eukaryotes and prokaryotes.

Prerequisite(s): (CHM2040 or CHM2050 or CHM2011, CHM2016) and (BIO1011, BIO1016 or SCI1015).

Offered at Charlotte, Providence

3 Semester Credits

CHM3046 Biochemistry Laboratory

This is a laboratory companion course coordinated with CHM3040. This course applies the basic concepts of biological chemistry to the laboratory setting. Emphasis is on inquiry-based experiments that ask students to explore fundamental concepts and experiments in biochemistry. Topics include experiments that focus on critical biochemical topics including biological buffer systems, amino acid/protein structure and properties, as well as the content of food and other biochemical topics of interest. Throughout this course, an evidence-based approach to exploration of organic laboratory experiments that are of interest to students in the nutrition and health science fields is emphasized.

Prerequisite(s): CHM2040 or CHM2050 or SCI2045 or CHM2011/CHM2016, SCI1015 or BIO1011/BIO1016, Corequisite: CHM3040.

Offered at Charlotte, Providence

1 Semester Credit

CHM3200 Analytical Chemistry

Analytical chemistry is a measurement science that is used in chemistry as well as throughout all fields of science and medicine. This course introduces students to the theory and applications of quantitative analytical chemistry. Topics covered include statistical data analysis; equilibrium constants expressions; acid-base reactions; volumetric analysis; and fundamentals of spectroscopy, electrochemistry, and of separations science. Laboratory experiments include learning about analytical process, calibration of glassware and equipment, wet chemical analysis, electrochemistry, spectroscopy and chromatography.

Prerequisite(s): CHM1022, CHM1026.

Offered at Providence

3 Semester Credits