

Chemistry

CH101 Physical Science

Cr-4

This course introduces the principles and methods of physical science. It stresses the structure and properties of materials and their interactions. Careful measurement, observation, and the scientific method are covered in lecture and laboratory to develop quantitative reasoning ability. Prerequisite: Appropriate high school GPA or placement test score.

CH111 Introduction to Chemistry 1

Cr-4

This course introduces chemistry for those who have had no prior chemistry study or who need chemistry review. Topics include matter, measurement, atomic structure and the periodic table, chemical bonding and reactions, and the three phases of matter. This course does not meet graduation requirements for Chemistry, Biology, or Engineering majors. Prerequisite: Appropriate high school GPA or placement test score or MA089 Arithmetic.

CH112 Introduction to Chemistry 2

Cr-4

This is the second introductory level chemistry course. Topics include solutions, colligative properties, concentrations, acids and bases, salts, solution equilibrium, pH buffers, electrolytes, and an introduction to organic molecules of biological importance. This course does not meet graduation requirements for Chemistry, Biology, or Engineering majors. Prerequisite: CH111 Introduction to Chemistry 1.

CH115 Introduction to Metallurgical Chemistry

Cr-4

This course introduces basic theory and practice as applied to the industrial setting. It emphasizes the practical aspects of working with chemicals and materials and covers the common forms of analytical chemistry, including instrumentation. Topics include problem-solving, the nature of matter, atomic structure and bonding, nomenclature, stoichiometry, gases, solution chemistry, electrochemistry, and organic chemistry. Prerequisite: MA121 Fundamentals of College Mathematics 1 or equivalent.

CH120 Demystifying Science: Scientific Literacy in the Physical Sciences

Cr-4

This course introduces students to physical science and emphasizes the attainment of scientific literacy. Students develop scientific literacy skills through the exploration of various physical science current issues including atmospheric ozone, ozone as a pollutant, transportation fuels, medicinal chemistry, nuclear energy, climate change, and water resources and pollutants.

CH131 College Chemistry

Cr-5

This is a one-semester introductory chemistry course for students in health professions. The course examines the history of chemistry, its impact on society and its connection to other disciplines. Topics include scientific method, atomic theory, bonding and reactions, introduction to oxidation-reduction, acid-base concepts, equilibrium, properties of solutions, and introduction to organic chemistry and its biochemical applications. The laboratory sequence supports the above topics and emphasizes careful observation and analysis of data to develop both qualitative and quantitative reasoning ability. This course does not meet graduation requirements for Chemistry, Biology, Computer Science, or Engineering majors. Co-requisite MA110 Elementary Statistics or higher.

CH135 Introduction to Organic Chemistry

Cr-4.5

This course is for students in the allied science and allied health professions. Topics include bonding, physical properties, chemical properties, nomenclature, and analysis of the common

organic compounds. The laboratory segment introduces basic organic laboratory techniques such as recrystallization, distillation, extraction, chromatography, and instrumentation. Prerequisite: CH131 College Chemistry or equivalent.

CH141 General Chemistry 1

Cr-4

This course introduces to the field of chemistry for science and engineering students. Topics include dimensional analysis, stoichiometry, periodicity, atomic structure and bonding, the states of matter, solutions, and acid and base concepts. The laboratory exercises exemplify chemical principles and develop individual problem-solving abilities. The laboratory experience includes preparation of the laboratory report and notebook. Prerequisites: High School Chemistry; and appropriate high school GPA or placement test score, or MA121 Fundamentals of College Mathematics 1, or MA139 College Algebra, or a corequisite of MA125 College Algebra and Trigonometry.

CH142 General Chemistry 2

Cr-4

This course is a continuation of CH141 General Chemistry 1. Topics include chemical thermodynamics, electrochemistry, chemical kinetics, chemical and solution equilibrium, descriptive organic chemistry, nuclear chemistry, and descriptive chemistry of elements. Prerequisite: CH141 General Chemistry 1.

CH200 Industrial Practicum

Cr-3

This course provides hands-on experience in chemical or environmental technology in an industrial or regulatory environment. It is offered on demand and may be taken at any time after completion of college chemistry, with appropriate placement arranged. A minimum of four weeks (135 hours) on site is required. Students may be paid by the industry involved. Prerequisite: One year of college chemistry and instructor permission.

CH229 Chemical Instrumentation

Cr-5

This course in applied instrumentation stresses the analytical solution of environmental/chemical problems by application of instrumental methods. Emphasis is placed on sampling, solution preparation, hands-on instrument operation, records keeping, data processing, and interpretation. Samples are taken to illustrate problems of air and water pollution, and solid and hazardous waste. Analysis methods include spectroscopy, electrochemistry, chromatography, thermal, and industrial hygiene. As time allows, field trips supplement the campus experience. Prerequisites: CH141 General Chemistry 1 and CH142 General Chemistry 2.

CH246 Quantitative Analysis

Cr-5

This course introduces analytical chemistry and develops the skills and perspectives necessary to solve problems. Topics include sampling, gravimetry, titrimetry, stoichiometry, equilibria, redox, potentiometry, and spectrophotometry. Samples are chosen to illustrate typical industrial and environmental problems. As time allows, field trips supplement the campus experience. Prerequisite: CH141 General Chemistry 1 and CH142 General Chemistry 2.

CH247 Organic Chemistry 1

Cr-5

This course introduces organic chemistry for science and engineering students. It includes a systematic study of classes of carbon compounds. It stresses reaction mechanisms, methods of synthesis, structured optical activity, chemical physical properties, and nomenclature. Topics included alkanes, alkenes, alkynes, aromatic compounds, stereochemistry, and spectroscopy. Prerequisites: CH141 General Chemistry 1 and CH142 General Chemistry 2.

CH248 Organic Chemistry 2**Cr-5**

This course is a continuation of CH247 Organic Chemistry 1 in developing the topics of: spectroscopy, alkyl halides, alcohols, ethers, carboxylic acids and their functional derivatives, aldehydes and ketones, carbanions, amines, and phenols. The laboratory exercises introduce multi-step synthesis and the analysis of organic compounds. Prerequisite: CH247 Organic Chemistry 1.

CH300 Independent Study in Chemistry**Cr-4**

Prerequisite: Permission of instructor.