

# Chemistry (CH)

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## Courses

### **CH 110 Introduction to Chemistry: 3 semester hours**

This course is intended to provide an overview of fundamental concepts in chemistry, including: atomic and molecular structure, the nature of chemical bonding, chemical reactions, and stoichiometry, nomenclature, basic knowledge of thermodynamics and equilibrium, acids/bases, basic organic chemical nomenclature and reactivity. This course meets the needs of students not planning to take chemistry courses beyond CH 113. Students with minimal mathematical skills can use CH 110 as a preparatory course for CH 111 General Chemistry I. Students must also register for CH 110L; however, students who have already completed CH 110L with a grade of "C" or better (C- does not count) need not repeat CH 110L. Three hours of lecture per week. Typically offered each fall and spring semester.

### **CH 110L Introduction to Chemistry Laboratory: 1.5 semester hour**

This course is designed to accompany CH 110: Introduction to General Chemistry. Students in this course will encounter introductory-level experiments designed to develop hands-on laboratory skills. Topics may include: measurement, the scientific method, acid-base chemistry, colligative properties, chemical synthesis, calorimetry and gas laws. Students must also register for CH 110 (lecture); however, students who have already completed CH 110 with a grade of C or better (C- does not count) need not repeat CH 110.

### **CH 111 General Chemistry I: 4.5 semester hours**

This course is an introduction to the field of chemistry, providing an understanding of the structures of atoms, molecules and ions and their interactions, and a foundation for the further study of chemistry. Three lectures and one three-hour lab weekly. Prerequisite: A Mathematics Pre-Algebra and Elementary Algebra Enhanced ACT subscore of 16 or higher; or a Mathematics score of 16 or higher on the former ACT; or completion of MA 008 with a grade of C or higher.

### **CH 112 General Chemistry II: 4.5 semester hours**

This course is a continuation of CH 111. Topics covered are: chemical kinetics; equilibrium and thermodynamics; acids and bases; electrochemistry; survey of metals, nonmetals, and transition metals; complexes; nuclear chemistry. Three lectures and one three-hour lab weekly. Prerequisite: CH 111.

### **CH 113 Introduction to Organic and Biochemistry: 4.5 semester hours**

This course is designed for nursing and non-science majors. It is a terminal course, not to be used as a prerequisite to further courses in chemistry, except CH 203. The course will focus on basic structure, formulas, nomenclature, and reactions of organic compounds. The fundamental concepts of biochemistry and metabolism of major molecules and their roll in biological processes will be studied. Three lectures and an additional two-hour lab meets weekly. Prerequisite: high school chemistry.

### **CH 203 Nutritional Biochemistry: 3 semester hours**

This course will focus on the study of nutrients, their metabolic roles and biochemical effects on various tissues and organs of the body; role of the diet in promoting optimal health and performance. Prerequisite: CH 111, CH 112.

### **CH 207 Inorganic Qualitative Analysis: 3 semester hours**

The course emphasizes descriptive inorganic chemistry (properties, structures, and reactions) of common elements and their compounds. Through the process of learning descriptive chemistry in the format of a scheme of analysis in the laboratory, students are challenged to bring to bear their manipulative and observational skills as the basis for identifying substances. Theoretical and practical aspects of qualitative analysis are covered. Prerequisites: CH 111, CH 112.

### **CH 211 Organic Chemistry I: 4.5 semester hours**

This course is an introduction to organic chemistry; an integrated presentation with emphasis on the theoretical aspects and mechanisms of reactions. Detailed discussion of alkanes, alkenes, alkynes, and stereochemistry. Three lectures and an additional three-hour lab meet weekly. Prerequisite: CH 111, CH 112.

### **CH 212 Organic Chemistry II: 4.5 semester hours**

This course is a continuation of CH 211. Functional groups discussed in detail. The course will provide an introduction to absorption spectroscopy and qualitative identification of organic compounds; aromatic and heterocyclic compounds; macromolecules. Three lectures and one additional three-hour lab meet weekly. Prerequisite: CH 111, CH 112, CH 211.

### **CH 251 Analytical Chemistry: 5 semester hours**

Theory and application of basic methods in quantitative analysis: titrimetric, gravimetric, chromatographic, potentiometric, and spectrophotometric determinations. Three lectures and one additional four-hour lab meet weekly. Prerequisites: CH 111, CH 112, MA 142 or MA 164.

### **CH 302 Biochemistry: 5 semester hours**

This course focuses on the study of life at the molecular level. The course examines chemical reactions in living cells; central metabolic pathways; energy transformations, signal-transduction pathways; transmission of hereditary characteristics; molecular basis of certain diseases and other biological phenomena. Three hours of lecture per week. Prerequisites: CH 111, CH 112, CH 211, CH 212.

### **CH 303 Biochemistry II: 3 semester hours**

A continuation of CH 302. Topics include metabolism of amino acids, proteins, and nucleic acids; DNA replication, repair, and recombination; RNA synthesis and processing; protein synthesis; and biochemical functions and concepts including mechanisms of actions, especially those related to normal healthy states to pathologic states. Prerequisites: CH 111, CH 112, CH 211, CH 212, CH 302.

### **CH 334 Instrumental Analysis: 4.5 semester hours**

The course teaches the underlying principles and practical aspects of using modern instruments in chemical analysis. Students will understand the chemistry relevant to sampling, sample preparation, and the chemical processes occurring in each instrument - such as electron transfer, electron emission, light scattering and absorption, gas and liquid phase equilibria. Prerequisites: CH 111, CH 112, CH 211, CH 212, CH 251.

### **CH 370 Physical Chemistry: 4.5 semester hours**

An introduction to physical chemistry. Topics covered include thermodynamics, kinetics, quantum chemistry, molecular structure and spectroscopy. Three hours of lecture and one three-hour laboratory weekly. Prerequisites: CH 111, CH 112, CH 211, CH 212, CH 251, MA 164.