

# CHEMISTRY (CHEM)

**CHEM 1010** — Introductory Chemistry PS

**Typically Offered:** Fall, Spring

**Credits:** 3

**Lecture hours:** 3

**General Ed Requirement:** Physical Science

This course introduces individuals to a variety of chemistry-related knowledge and experience and is designed to give non-majors a glimpse at chemistry and how it relates to the world around them. As a general education course, it relates chemistry to the real world experience and gives the student an opportunity to investigate chemical principles in their life. It gives the student a feeling for how scientists view problems and the systematic method by which they solve them. Discussion topics are chosen from physical, organic, and biological areas inside the chemistry field.

**Prerequisites:** MATH 0850 or MATH 1010 or MATH 1030 or MATH 1040 (may be taken concurrently) or MATH 1050 (may be taken concurrently) or MATH 1060 (may be taken concurrently) or MATH 1080 (may be taken concurrently) or MATH 1100 (may be taken concurrently) or MATH 1210 (may be taken concurrently) or MATH 1220 (may be taken concurrently) or ACT Math Score with a score of 18 or SAT Mathematics with a score of 530 or ALEKS PPL Math Placement with a score of 30

**CHEM 1015** — Introductory Chemistry Lab LB

**Typically Offered:** Fall, Spring

**Credits:** 1

**Lab hours:** 2

**General Ed Requirement:** Natural Science Lab

This is a hands-on laboratory experience that accompanies the CHEM 1010 course. It is designed to give students a feel for basic laboratory equipment and measurement. It also provides reinforcement of the concepts covered in the class. The lab also enables students to visualize many concepts and experiments discussed in class.

**Prerequisites:** MATH 0850 or SAT Math with a score of 530 or ACT Math Score with a score of 18 or ALEKS PPL Math Placement with a score of 30 or MATH 1010 or MATH 1030 or MATH 1040 (may be taken concurrently) or MATH 1050 (may be taken concurrently) or MATH 1052 (may be taken concurrently) or MATH 1060 (may be taken concurrently) or MATH 1080 (may be taken concurrently) or MATH 1100 (may be taken concurrently) or MATH 1210 (may be taken concurrently) or MATH 1220 (may be taken concurrently)

**Corequisites:** CHEM 1010

**CHEM 1020** — The Chemistry of Cooking PS

**Credits:** 3

**Lecture hours:** 3

**General Ed Requirement:** Physical Science

In this course, students will explore the chemical principles that underpin great cooking; specifically, this course will focus on the chemistry of salt, fat, acid, and heat. Students will explore the principles that drive flavor, texture, and aroma by learning chemistry concepts, conducting scientifically rigorous food chemistry experiments, crafting evidence-based arguments, and presenting their findings in scientific ways.

**CHEM 1090** — Chemistry of Color PS

**Typically Offered:** Fall, Spring

**Credits:** 3

**Lecture hours:** 3

**General Ed Requirement:** Physical Science

What's your favorite color? This course will explore how light and atoms and molecules interact to create the colors that brighten our lives. This no-math-prerequisite General Education physical science course is for anyone who loves colors and has wondered about where they come from. There is no co-requisite lab component; some class sessions will have hands-on activities.

**CHEM 1110** — Elementary Chemistry PS

**Typically Offered:** Fall, Spring, Summer

**Credits:** 4

**Lecture hours:** 4

**General Ed Requirement:** Physical Science

This course introduces individuals to a variety of chemistry-related knowledge and experience. As a general education course, it relates chemistry to the real-world experience and gives the student an opportunity to investigate chemical principles in their life. The course serves as a prerequisite to programs related to allied health such as nursing, economics, biology, natural resources, and others. The course also serves as a preparatory course for general chemistry. Some topics in the course are atomic structure, chemical calculations, energy and matter, gas laws, nuclear chemistry and an introduction to organic chemistry.

**Prerequisites:** MATH 0850 or MATH 1010 or MATH 1030 or MATH 1040 or MATH 1050 or MATH 1080 or MATH 1100 or MATH 1210 or ACT Math Score with a score of 21 or SAT Mathematics with a score of 660 or SAT Math with a score of 660 or ALEKS PPL Math Placement with a score of 30

**Corequisites:** CHEM 1115

**CHEM 1115** — Elementary Chemistry Lab LB

**Typically Offered:** Fall, Spring, Summer

**Credits:** 1

**Lab hours:** 2

**General Ed Requirement:** Natural Science Lab

This is a general inorganic and organic chemistry laboratory which reinforces the fundamental facts, theories and laws of chemistry through laboratory experiences. (It is designed for students in home economics, nursing, physical therapy, some areas of biology, forestry and agriculture, as well as other related health sciences.) Concurrent enrollment in CHEM 1110 is required. A lab fee is required for non-online sections.

**Prerequisites:** MATH 0850 or ACT Math Score with a score of 21 or ALEKS PPL Math Placement with a score of 30 or SAT Mathematics with a score of 660 or MATH 1010 or MATH 1030 or MATH 1040 or MATH 1045 or MATH 1050 or MATH 1052 or MATH 1080 or MATH 1100 or MATH 1210

**Corequisites:** CHEM 1110

**CHEM 1120** — Elementary Organic/Biochemistry**Typically Offered:** Spring**Credits:** 4**Lecture hours:** 4

This is the second semester course of a General Organic and Biochemistry sequence. It completes an introduction to organic chemistry and covers elementary biochemistry. It includes the study of alcohols, aldehydes, carboxylic acids and derivatives. Also included are topics of: stereochemistry, carbohydrates, lipids, proteins, enzymes, and metabolism. Students taking this course are typically pursuing majors that may include home economics, agricultural sciences, physical therapy, nursing, and other related health sciences.

**Prerequisites:** CHEM 1110 and CHEM 1115**Corequisites:** CHEM 1125**CHEM 1125** — Elementary Organic/Biochemistry Lab**Typically Offered:** Spring**Credits:** 1**Lab hours:** 2

This is an organic and biochemistry laboratory which reinforces the fundamental facts, theories, and laws of chemistry through laboratory experiences. It is designed for students in family and consumer science, nursing, physical therapy, some areas of biology, forestry and agriculture. Lab fee required.

**Prerequisites:** CHEM 1110 and CHEM 1115**Corequisites:** CHEM 1120**CHEM 1210** — Principles of Chemistry I PS**Credits:** 4**Lecture hours:** 4**General Ed Requirement:** Physical Science

This course is designed to teach chemical theory and principles as they are applied to present day chemistry. Topics covered in this course include atomic theory, gas laws, thermochemistry, molecular bonding, reaction chemistry, etc. This course is for students majoring in programs such as chemistry, physics, geology, biology, engineering, and pre-medical areas who will take additional chemistry courses.

**Prerequisites:** MATH 1050 (may be taken concurrently) or MATH 1060 (may be taken concurrently) or MATH 1080 (may be taken concurrently) or MATH 1210 (may be taken concurrently) or ACT Math Score with a score of 26 or SAT Mathematics with a score of 660

**Corequisites:** CHEM 1215**CHEM 1215** — Principles of Chemistry Lab I**Credits:** 1**Lab hours:** 3**General Ed Requirement:** Natural Science Lab

This course is an introduction to the chemistry laboratory as it applies to present day chemistry. (Lab fee required)

**Corequisites:** CHEM 1210**CHEM 1220** — Principles of Chemistry II PS**Credits:** 4**Lecture hours:** 4**General Ed Requirement:** Physical Science

This course is a continuation of CHEM 1210. The principles of equilibrium, kinetics, thermodynamics, and solution chemistry are applied to present-day chemistry. This course is for students in the natural sciences such as Chemistry, Physics, Biology, engineering, and Pre-medical areas who will take additional chemistry courses.

**Prerequisites:** CHEM 1210**Corequisites:** CHEM 1225**CHEM 1225** — Principles of Chemistry Lab II**Credits:** 1**Lab hours:** 3**General Ed Requirement:** Natural Science Lab

This course is designed to give students experience with lab experiments related to kinetics, acid-base chemistry, qualitative analysis, electrochemistry, polymers, and introduce basic synthesis techniques and crystal field theory. (Lab fee required)

**Prerequisites:** CHEM 1210 and CHEM 1215**Corequisites:** CHEM 1220**CHEM 1350** — Forensic Science PS**Credits:** 3**Lecture hours:** 3**General Ed Requirement:** Physical Science

This course will introduce students to modern criminal investigative techniques. Students will learn about the capabilities, use, potential, and limitations of forensic laboratory theory and techniques in respect to the analysis of evidence. Topics include evidence collection, serology, DNA analysis, fingerprint analysis, and chemical analysis of physical evidence.

**CHEM 1355** — Forensic Science Lab LB**Credits:** 1**Lab hours:** 2**General Ed Requirement:** Natural Science Lab

This course is designed to give students experience with lab experiments related to evidence collection, serology, DNA analysis, fingerprint analysis, and chemical analysis of physical evidence. (Lab fee required)

**Corequisites:** CHEM 1350**CHEM 2310** — Organic Chemistry I**Typically Offered:** Fall**Credits:** 4**Lecture hours:** 4

This course is the first semester of a full-year series in organic chemistry, which is the study of the structures and properties of compounds primarily composed of carbon and hydrogen. Reactivity is studied in the context of mechanism patterns associated with functional groups, with emphasis on synthesis and biochemical applications. This course is required for all chemistry-centered majors, most pre-professional programs, and many life science majors, and is commonly taken in the second year of study.

**Prerequisites:** CHEM 1220**Corequisites:** CHEM 2315**CHEM 2315** — Organic Chemistry Lab I**Typically Offered:** Fall**Credits:** 1**Lab hours:** 3

This lab course is designed for pre-professional majors as well as chemistry majors. The laboratory experience reinforces the principles of organic chemistry by teaching foundational techniques and simple synthesis reactions. (Lab fee required)

**Prerequisites:** CHEM 1225**Corequisites:** CHEM 2310

**CHEM 2320** — Organic Chemistry II**Credits: 4****Lecture hours: 4**

This is the second semester course of a full-year series in organic chemistry, which is the study of the structures and properties of compounds primarily composed of carbon and hydrogen. Reactivity is studied in the context of mechanism patterns associated with functional groups, with emphasis on synthesis and biochemical applications.

This course is required for all chemistry-centered majors, most pre-professional programs, and many life science majors, and is commonly taken in the second year of study.

**Prerequisites: CHEM 2310 and CHEM 2315****Corequisites: CHEM 2325****CHEM 2325** — Organic Chemistry Lab II**Credits: 1****Lab hours: 3**

This lab course is designed for pre-professional majors as well as chemistry majors. The laboratory experience reinforces the principles of organic chemistry by teaching foundational techniques and simple synthesis reactions. (Lab fee required)

**Prerequisites: CHEM 2310 and CHEM 2315****Corequisites: CHEM 2320****CHEM 2915** — Undergraduate Research**Credits: 2****Lecture hours: 1****Lab hours: 2**

This course provides an opportunity for students to apply knowledge and techniques learned in classroom settings to actual research experience. No more than six students will assist one faculty member in that person's research. Students will receive faculty direction for at least one hour per week and lab research participation will usually range from two to four hours weekly. A short summary will be required to be presented to a small, in-lab seminar of interested students and faculty at the end of the semester.

**Prerequisites: CHEM 1210****CHEM 2925** — Undergraduate Research**Credits: 2****Lecture hours: 1****Lab hours: 2**

This course provides an opportunity for students to apply knowledge and techniques learned in classroom settings to actual research experience. No more than six students will assist one faculty member in that person's research. Students will receive faculty direction for at least one hour a week and lab research participation will usually range from two to four hours weekly. A short summary will be required to be presented to a small, in-lab seminar of interested students and faculty at end of semester.

**Prerequisites: CHEM 1210**