

# CHEMISTRY (CHEM)

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## **CHEM S100 \*Introduction to Chemical Science**

3 credits (3+0)

GER. Introduction to chemistry for the non-science major. Includes units of measurement, atomic and molecular structure, chemical bonding, metabolism, radioactivity oxidation-reduction reactions, solutions, acids and buffers.

## **CHEM S103 \*Introduction to General Chemistry**

4 credits (3+3)

GER. Fundamentals of chemistry including the historical and descriptive aspects as well as basic mathematical concepts. Prepares students to take CHEM S105.

**Prerequisite:** MATH S105.

## **CHEM S104 A Survey of Organic and Biochemistry**

4 credits (3+4)

Fundamentals of chemistry as applied to biological systems. Bridges the gap between a general chemistry course and the biological concepts of other health related sciences. Recommended for health science degree majors.

**Prerequisite:** CHEM S103.

## **CHEM S105 \*General Chemistry I**

3 credits (3+0)

GER. An introduction to general chemistry intended for engineering and science majors. Topics include measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, phases, thermodynamics, problem-solving (applied mathematics), and special topics. CHEM S105L is the laboratory component of this course and is a co-requisite of CHEM S105. Students must be enrolled in both CHEM S105 and CHEM S105L to receive full credit for General Chemistry I. Concurrent enrollment in CHEM S105R is recommended. CHEM S105 and CHEM S106, together with their laboratory components CHEM S105L and CHEM S106L, constitute the standard one-year engineering and science major general chemistry courses. Co-requisite: CHEM S105L.

**Prerequisite:** College preparatory chemistry or equivalent (high school chemistry) with a grade of C (2.0) or better and MATH S151 with a grade of C (2.0) or better (concurrent enrollment accepted with permission of instructor).

## **CHEM S105L General Chemistry I Laboratory**

1 credit (0+4)

An introduction to laboratory techniques in general chemistry intended for engineering and science majors. The course includes experiments designed to reinforce concepts, including the basics of laboratory equipment, experimental methodology, data collection, data analysis, and reporting. This course illustrates, augments and applies concepts covered in CHEM S105. CHEM S105 is the lecture component of this course and is a co-requisite of CHEM S105L. Students must be enrolled in both CHEM S105 and CHEM S105L to receive full credit for General Chemistry I. Concurrent enrollment in CHEM S105R is recommended. CHEM S105L and S106L, together with their lecture components CHEM S105 and CHEM S106, constitute the standard one-year engineering and science major general chemistry courses. Co-requisite: CHEM S105.

**Prerequisite:** College preparatory chemistry or equivalent (high school chemistry) with a grade of C (2.0) or better and MATH S151 with a grade of C (2.0) or better (concurrent enrollment accepted with permission of instructor).

## **CHEM S105R General Chemistry I Recitation**

1 credit (1+0)

Provides direction and review of the concepts and calculations covered in General Chemistry I. Quizzes, homework problems and exams presented in CHEM S105 will be covered extensively. Requires concurrent enrollment in CHEM S105 or instructor permission. Pass/Fail grading.

## **CHEM S106 \*General Chemistry II**

3 credits (3+0)

GER. This course is the second semester lecture course in the general chemistry sequence and is intended for engineering and science majors. Topics include kinetics, equilibrium chemistry (including acids and bases, solubility, and complex ion formation), nuclear chemistry, electrochemistry, thermodynamics, and special topics. CHEM S106L is the laboratory component of this course and is a co-requisite of CHEM S106. Students must be enrolled in both CHEM S106 and CHEM S106L to receive full credit for General Chemistry II. Concurrent enrollment in CHEM S106R is highly recommended.

**Prerequisite:** CHEM S105 and CHEM S105L or equivalent with a grade of C (2.0) or better.

## **CHEM S106L General Chemistry II Laboratory**

1 credit (0+4)

This second semester laboratory course in the general chemistry sequence is intended for engineering and science majors. Experiments are designed to reinforce concepts, including the basics of laboratory equipment, experimental methodology, data collection, data analysis and reporting. This course illustrates, augments and applies concepts covered in CHEM S106. CHEM S106 is the lecture component of this course and is a co-requisite of CHEM S106L. Students must be enrolled in both CHEM S106 and CHEM S106L to receive full credit for General Chemistry II. Concurrent enrollment in CHEM S106R is highly recommended.

**Prerequisite:** CHEM S105 and CHEM S105L or equivalent with a grade of C (2.00) or better.

**CHEM S106R General Chemistry II Recitation**

1 credit (1+0)

Provides direction and review of the concepts and calculations covered in General Chemistry II. Quizzes, homework problems and exams presented in CHEM S106 will be covered extensively. Requires concurrent enrollment in CHEM S106 or instructor permission. Pass/Fail grading.

**CHEM S321 Organic Chemistry I**

4 credits (3+4)

A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis, and physical and spectroscopic properties. Lab portion will include an introduction to synthetic techniques and spectroscopy.

**Prerequisite:** CHEM S106 (C 2.0 or better).

**CHEM S325 Organic Chemistry II**

4 credits (3+4)

A systematic study of the more important functional groups of carbon compounds, including their mechanism of reaction, methods of synthesis, and physical and spectroscopic properties. Lab portion will include an introduction to synthetic techniques and spectroscopy.

**Prerequisite:** CHEM S321 with a grade of C (2.0) or better.

**CHEM S342 Biochemistry**

4 credits (3+4)

Lecture and laboratory which introduce the fundamental principles of biochemistry. Topics include structure and function of biological molecules, properties of enzymes, kinetics, bioenergetics, metabolism, and molecular biology. Four hours lab per week required.

**Prerequisite:** CHEM S321 with a C (2.0) or better.

**CHEM S349 Survey of Environmental Chemistry**

3 credits (3+0)

Provides a general overview of chemical processes in the natural environment. Subjects include the chemistry of natural and anthropogenic processes in air, soil, and water; energy production and its impact; abiotic and biotic attenuation of contaminants. Students may not co-register for CHEM S349 and CHEM S350. Completion of CHEM S349 with a grade of C (2.00) or better precludes registration for CHEM S350. CHEM S321 recommended.

**Prerequisite:** CHEM S106 with C (2.00) or higher, or instructor approval.

**CHEM S350 Environmental Chemistry**

4 credits (3+4)

Provides a general overview of chemical processes in the natural environment. Subjects include the chemistry of natural and anthropogenically influenced processes in air, soil, and water; energy production and its impact. Laboratory focuses on the analytical tools and methods used in chemical analyses of environmental samples. Completion of CHEM S349 with a C or better precludes registration for CHEM S350. Successful completion of CHEM S321 is recommended.

**Prerequisite:** CHEM S106 (C 2.0 or better).

**CHEM S393P ST:**

**CHEM S498 Research:**