

CHEMISTRY (CHEM)

Courses

CHEM 615 CHEMICAL REACTIVITY 3 Units

This course applies the ideas of physical chemistry to achieve a fuller understanding of chemical reactivity, the tendency of matter to undergo chemical change. This course will focus on using fundamental ideas to build physical models and explore the microscopic mechanisms that determine chemical reactivity.

PREREQ: UNDERGRADUATE DEGREE IN CHEMISTRY OR CONSENT OF INSTRUCTOR

CHEM 620 A SAFER, GREENER WORLD THROUGH CHEMISTRY 3 Units

This course will focus on perpetuating a culture of safety and sustainability. Students will examine how safety methods, chemical hygiene plans, and chemical labeling apply to working in a lab to make it safer. Students will analyze the benefits and principles of green chemistry to improve sustainability of chemical reactions and processes.

PREREQ: UNDERGRADUATE DEGREE IN CHEMISTRY OR CONSENT OF INSTRUCTOR

CHEM 660 COORDINATION CHEMISTRY AND GROUP THEORY 3 Units

In this course, students will learn symmetry including symmetry elements and symmetry operations, point groups, group theory and its applications in molecular orbital theory and spectroscopic interpretation; basic fundamental knowledge of coordination chemistry; organometallic and bioinorganic compounds and their applications; solid state chemistry and main group chemistry. In addition, atomic and molecular structures, bonding theories, periodic properties of the elements will also be covered.

PREREQ: BACHELOR'S DEGREE IN CHEMISTRY OR A BACHELOR'S DEGREE IN A STEM FIELD WITH A MINOR IN CHEMISTRY

CHEM 680 INSTRUMENTAL ANALYSIS 3 Units

Instrumental Analysis provides a comprehensive, modern, and practical coverage of modern chemical instrumentation. The course content will cover atomic, molecular, X-ray, IR, Raman, and NMR spectroscopy along with mass spectrometry, electrochemical, microscopy and thermoanalytic techniques. In addition, the course will examine the advancements in the field from the miniaturization of electronics.

CHEM 690 WORKSHOP *Repeatable* 1-4 Units

Variable topics. Group activity oriented presentations emphasizing "hands on" and participatory instructional techniques.

CHEM 696 SPECIAL STUDIES *Repeatable* 1-3 Units

Variable topics. Group activity. Not offered regularly in the curriculum but offered on topics selected on the basis of timeliness, need, and interest, and generally in the format of regularly scheduled Catalog offerings.

Repeatable 2 times for maximum 6 credits.

CHEM 705 ORGANIC SPECTROSCOPY 3 Units

Organic Spectroscopy will cover UV-Vis, IR, H-NMR, C-NMR, and Mass Spectroscopies. A basic description of the instrumentation and theory will be covered. The course will primarily focus on the skills of analyzing spectra obtained from these various techniques for identifying and characterizing organic molecules.

PREREQ: COMPLETION OF AN UNDERGRADUATE ORGANIC CHEMISTRY SEQUENCE IS HIGHLY ENCOURAGED

CHEM 710 MATERIALS CHEMISTRY 3 Units

Our modern society is dependent on a variety of materials used all around us. Materials chemistry involves the study of solid materials usually found in metals, ceramics, and polymers. This course will cover the fundamental chemistry and applications of materials chemistry, as well as materials properties and characterization. We will explore how the atomic, molecular, crystalline and amorphous structures of materials can impact their electronic, optical, thermal, and mechanical properties.

PREREQ: BACHELOR'S DEGREE IN CHEMISTRY OR A BACHELOR'S DEGREE IN A STEM FIELD WITH A MINOR IN CHEMISTRY

CHEM 765 STRUCTURAL BIOCHEMISTRY AND ENZYMOLOGY 3 Units

Biochemistry is the study of chemical reactions as pertained to biological systems. This is a field of intense research with numerous medical and agricultural applications. One of the main goals of this course is to introduce students to fundamental biochemical concepts, and to help them bridge the gap between chemistry and biology while developing a working vocabulary of biochemistry.

PREREQ: BACHELOR'S DEGREE IN CHEMISTRY OR A BACHELOR'S DEGREE IN A STEM FIELD WITH A MINOR IN CHEMISTRY

CHEM 794 SEMINAR 1-3 Units

Variable topics. Group activity. An advanced course of study in a defined subject matter area emphasizing a small group in intense study with a faculty member.

CHEM 798 INDIVIDUAL STUDIES 1-3 Units

Study of a selected topic or topics under the direction of a faculty member.