

Chemistry

CH 0100 - Chemistry Coaching

Scheduled weekly individual or study group session with an experienced chemistry coach to improve mastery of chemistry material, problem-solving skills, and awareness of expectations in first year chemistry.

Credits: 0.0; May be repeated

Semesters Offered: Fall, Spring, Summer

CH 1000 - Preparatory Chemistry

Fundamental principles, laws, and theories of chemistry for students who have not taken high school chemistry, but who have one unit of high school algebra or equivalent.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Summer

CH 1112 - University Chemistry - Studio Laboratory I

Introduces experimental and theoretical chemical concepts from a hands-on, inquiry-based perspective. Emphasis is placed on experimental methods, reactions and stoichiometry, states of matter, thermochemistry, periodicity and bonding, solutions, and kinetics.

Credits: 5.0

Lec-Rec-Lab: (3-1-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Biochem & Molec Biology-Chem, Pharmaceutical Chemistry, Chemistry, Cheminformatics

Pre-Requisite(s): MA 1031 or MA 1032

CH 1122 - University Chemistry - Studio Laboratory II

Introduces more complex experimental and theoretical concepts from a hands-on, inquiry-based perspective. Emphasis is on experimental methods, kinetics, equilibria, thermodynamics, electrochemistry, and special topics which may include chemical analysis, organic synthesis, computational methods, and biochemistry.

Credits: 5.0

Lec-Rec-Lab: (3-1-3)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Major(s): Biochem & Molec Biology-Chem, Pharmaceutical Chemistry, Chemistry, Cheminformatics

Pre-Requisite(s): CH 1100 or (CH 1110 and CH 1111) or CH 1112 or (CH 1150 and CH 1151)

CH 1130 - Orientation

Discussion of career opportunities in chemistry; introduction to the ChemSci computer network. Required for all entering chemistry majors.

Credits: 1.0

Lec-Rec-Lab: (1-0-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Chemistry

CH 1140 - Introduction to Organic, Inorganic and Biochemistry

Introduces the principles of organic, inorganic, and biochemistry. Topics include nomenclature, chemical bonding, oxidation reduction, properties of gases and liquids, and nuclear chemistry. Chemistry majors may not include this course as part of the credit requirements for graduation.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): CH 1100 or (CH 1110 and CH 1111) or CH 1112 or (CH 1150 and CH 1151)

CH 1150 - University Chemistry I

Introduces the foundations of chemistry, including electronic structure of atoms and molecules, intermolecular forces, states of matter, chemical reactions, organic chemistry, chemical equilibria, kinetics, and acid-base chemistry. Includes laboratory component that emphasizes lecture components.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1151

CH 1151 - University Chemistry Lab I

Laboratory to accompany CH1150.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1150

CH 1153 - University Chem Recitation I

Problem solving session to support University Chemistry I - CH1150.

Credits: 1.0; Graded Pass/Fail Only

Lec-Rec-Lab: (0-0-1)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1150

CH 1160 - University Chemistry II

A continuation of CH 1150. Introduces more complex concepts in chemistry, including kinetics, chemical equilibria, acid-base equilibria, thermodynamics, electrochemistry, and chemical analysis. Additional topics may include chemistry of the metals and non-metals, biochemical systems, and nuclear chemistry. Includes laboratory component that emphasizes lecture concepts.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1161

Pre-Requisite(s): CH 1100 or (CH 1110 and CH 1111) or CH 1112 or (CH 1150 and CH 1151)

CH 1161 - University Chemistry Laboratory II

Laboratory to accompany CH1160.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1160

Pre-Requisite(s): CH 1100 or (CH 1110 and CH 1111) or CH 1112 or (CH 1150 and CH 1151)

CH 1163 - Problem Solving in University Chemistry II - CH1160

Problem solving session to support University Chemistry II - CH1160.

Credits: 1.0; Graded Pass/Fail Only

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): CH 1160

Pre-Requisite(s): CH 1100 or (CH 1110 and CH 1111) or (CH 1150 and CH 1151)

CH 2212 - Quantitative Analysis

Measurements and calculations relevant to volumetric and gravimetric analysis as well as electrochemistry and separations. Error analysis and statistical treatment of data. In the laboratory, introduces classical and contemporary techniques that require high quality measurements.

Credits: 5.0

Lec-Rec-Lab: (3-0-6)

Semesters Offered: Spring

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 2400 - Principles of Organic Chemistry

Discusses properties and reactions of various functional groups using reaction mechanisms as a unifying theme. Emphasizes practical applications using industrial, environmental, current events, and biological/medicinal examples. Not open to students whose programs require CH2410.

Credits: 4.0

Lec-Rec-Lab: (4-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Major(s):

Chemistry, Biological Sciences

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 2410 - Organic Chemistry I

A study of the chemistry of carbon compounds. Review of hybrid orbitals, covalent bonding, and resonance. Introduction to nomenclature, stereochemistry, infrared and nuclear magnetic resonance spectroscopy, functional group chemistry based on reaction mechanisms, and multi-step synthesis.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Summer

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 2411 - Organic Chemistry Lab I

Laboratory to accompany CH2410 and CH2400.

Credits: 1.0

Lec-Rec-Lab: (0-0-3)

Semesters Offered: Fall, Summer

Pre-Requisite(s): (CH 2400(C) or CH 2410(C)) and CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 2420 - Organic Chemistry II

Continuation of CH2410. Covers more functional group chemistry based on reaction mechanisms; more involved multi-step synthesis; introduction to carbohydrates, amino acids, proteins, nucleic acids; and topics of specialized interest.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring, Summer

Pre-Requisite(s): CH 2400 or CH 2410

CH 2421 - Organic Chemistry Lab II

Laboratory to accompany CH2420.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Spring, Summer

Pre-Requisite(s): CH 2411 and CH 2420(C)

CH 3020 - Laboratory Teaching Internship

Requires teaching a section of undergraduate laboratory under professional supervision. Emphasizes communicating good laboratory practice and technique to beginning students as well as maintaining a safe working environment. Includes safety training and teaching orientation. Required for certification in the ACS chemistry/education option.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Fall, Spring

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman, Sophomore

CH 3500 - Physical Chemistry for Environmental and Life Sciences

Equilibrium thermodynamics, chemical kinetics, transport properties, gas laws, and phase equilibria with an emphasis on solution behavior and applications to molecules important in the environmental and life sciences.

Credits: 2.0

Lec-Rec-Lab: (2-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Major(s):

Chemistry, Chemical Engineering

Pre-Requisite(s): CH 1120 or CH 1122 or CH 1140 or (CH 1160 and CH 1161) and MA 2160

CH 3501 - Physical Chemistry for Environmental and Life Sciences

Equilibrium thermodynamics, chemical kinetics, transport properties, gas laws, and phase equilibria with an emphasis on solution behavior and applications to molecules important in the environmental and life sciences. Course offered first half of spring semester.

Credits: 2.0

Lec-Rec-Lab: (4-0-0)

Semesters Offered: Spring

Restrictions: May not be enrolled in one of the following Major(s):

Chemistry, Chemical Engineering

Pre-Requisite(s): (CH 1122 or CH 1140 or CH 1160 and CH 1161) and MA 2160

CH 3510 - Physical Chemistry I - Thermodynamics, Equilibrium and Kinetics

Ideal and non-ideal gas laws, the kinetic theory of gases, equations of state, liquid-vapor equilibrium, the laws of thermodynamics, solid-liquid-vapor equilibria, the chemical potential, chemical equilibrium, electrochemistry, the phase rule, phase diagrams, and chemical kinetics.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161) and MA 2160 and PH 2200(C)

CH 3511 - Physical Chemistry Lab I

Laboratory to supplement CH3510.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): CH 3510(C)

CH 3520 - Physical Chemistry II - Molecular Structure

Continuation of CH3510. Covers solid-state chemistry, surface chemistry, atomic and molecular spectroscopy and structure, chemical applications of group theory, valence, the periodic table, elements of quantum mechanics, and statistical thermodynamics.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161) and MA 3160 and PH 2200(C)

CH 3521 - Physical Chemistry Lab II

Laboratory to supplement CH3520.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Spring

Pre-Requisite(s): CH 3520(C)

CH 3540 - Biophysical Chemistry

Examines fundamental physical principles underlying complex biological systems in order to understand the interactions and behaviors found in biological, biochemical, and physical systems. Topics include macromolecules in aqueous environments, spectroscopy and structure determination, kinetics, membranes, and transport phenomena.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): (BL 1020 or BL 1040) and CH 1120 or CH 1122 or (CH 1160 and CH 1161) and MA 2160 and PH 2200

CH 3541 - Biophysical Chemistry Laboratory

Examines the physical methods employed in the study of biological systems, including structure determination, spectroscopy, microscopy, imaging, and modeling. The core objective is application of the fundamentals developed in the Biophysical Chemistry course to systems of biological relevance.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Spring

Co-Requisite(s): CH 3540

CH 4110 - Pharmaceutical Chemistry I: Drug Action

Focuses on structural and mechanistic approaches to pharmaceuticals and drug action. General principles of absorption, distribution, action, metabolism and toxicity of drugs will be presented followed by action of drug classes such as antibiotics, cardiovascular, and anti-inflammatory drugs.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): BL 4010 or CH 4710

CH 4120 - Pharmaceutical Chemistry II: Drug Design

Focuses on the important concepts in the design and synthesis of drugs. Rational basis for drug design including synthetic, computational and biochemical concepts will be discussed. Topics include structure-activity relationships, synthesis and reaction mechanism, and case studies of drugs.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): CH 4110

CH 4190 - Current Topics in Pharmaceutical Chemistry

Discussion of recent topics in pharmaceutical chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4210 - Instrumental Analysis

The lecture portion of CH4212; not open to undergraduate chemistry majors.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): CH 2212 and CH 3510(C) and CH 3511(C)

CH 4212 - Instrumental Analysis

Chemical instrumentation applied to organic and inorganic analysis with emphasis on chromatography and spectroscopy.

Credits: 5.0

Lec-Rec-Lab: (3-0-6)

Semesters Offered: Fall

Pre-Requisite(s): CH 2212 and CH 3510(C) and CH 3511(C)

CH 4222 - Introduction to Quantitative and Instrumental Analysis

Measurements and calculations relevant to volumetric and gravimetric techniques. Error analysis and statistical treatment of data. Basic chemical instrumentation applied to organic and inorganic analysis with emphasis on chromatography and spectroscopy.

Credits: 5.0

Lec-Rec-Lab: (3-0-6)

Semesters Offered: Spring

Restrictions: Permission of instructor required; May not be enrolled in one of the following Major(s): Cheminformatics, Chemistry; May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): (CH 1122 or CH 1160 and CH 1161) and CH 3510(C) and CH 3511(C)

CH 4230 - Solutions and pH

Laboratory-intensive course offered by arrangement. Students will learn proper solution preparation techniques. Acid-base equilibrium calculations will be introduced and buffer solutions prepared. Chemical safety will be integrated into all aspects of this course.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Permission of department required

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 4231 - Introduction to Spectroscopy

Laboratory-intensive course offered by arrangement. Students will learn how to recognize compounds suitable for spectroscopic analysis. Sample preparation, calibration methods, and chemical safety will be emphasized. An introduction to spectroscopic instrumentation will also be given.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Permission of department required

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 4232 - Introduction to Gas Chromatography

Laboratory-intensive course offered by arrangement. Students will learn how to recognize compounds suitable for gas chromatographic analysis. Sample preparation and quantitative analysis will be emphasized. An introduction to GC instrumentation will also be given.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Permission of department required

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 4233 - Introduction to Liquid Chromatography

Laboratory-intensive course offered by arrangement. Students will learn how to recognize compounds suitable for liquid chromatographic analysis. Sample preparation and quantitative analysis will be emphasized. An introduction to LC instrumentation will also be given.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Permission of department required

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 4272 - Process Analytical Chemistry

Hands-on introduction to the application of modern analytical chemistry in the process industries. Presents the fundamentals, use, and limitations of instruments used for process analytical measurements as well as safety regulations and hazard classifications. Emphasizes theory and practical aspects of process sampling.

Credits: 4.0

Lec-Rec-Lab: (0-2-6)

Semesters Offered: Spring

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): CH 3511

CH 4290 - Current Topics in Analytical Chemistry

Discussion of recent topics in analytical chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4292 - Independent Study in Analytical Chemistry

An undergraduate research experience in analytical chemistry. Students select a literature and/or laboratory problem and write a summary report.

Credits: variable to 3.0; Repeatable to a Max of 9

Semesters Offered: On Demand

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

CH 4310 - Inorganic Chemistry I

Study of the bonding, physical and chemical properties, structure and reactions of the chemical elements and their compounds. Examples will include both transition metals and main group elements.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): CH 3520

CH 4311 - Inorganic Chemistry Laboratory

Laboratory preparations (selected inorganic and organometallic compounds) that illustrate appropriate experimental techniques for syntheses, manipulations, and methods of analyses.

Credits: 2.0

Lec-Rec-Lab: (0-0-4)

Semesters Offered: Fall

Pre-Requisite(s): CH 4310(C)

CH 4320 - Inorganic Chemistry II

Continuation of CH4310. A survey course that continues the study of the general principles of inorganic chemistry and the chemistry of the elements and their compounds.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Pre-Requisite(s): CH 4310

CH 4390 - Current Topics in Inorganic Chemistry

Discussion of recent topics in inorganic chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4412 - Spectroscopy of Organic Chemistry

Emphasizes use of spectral data interpretation to determine structures of organic compounds. Discusses proton and carbon nuclear magnetic resonance (including two-dimensional techniques, COSY, HETCOR, etc.), mass spectrometry, infrared spectrophotometry. Includes use of modern software, including NMR spectramodelling, data handling and presentation, and spectral database packages.

Credits: 3.0

Lec-Rec-Lab: (2-0-3)

Semesters Offered: Spring

Pre-Requisite(s): CH 2420

CH 4430 - Intermediate Organic Chemistry

Develop the chemical intuition necessary for advanced work in organic chemistry. Emphasizes reaction mechanisms and why reactions occur. Topics include heteroaromatic chemistry, curved-arrow formalism and multi-step reactions, molecular orbitals and symmetry-controlled reactions, Hammett equation and structure-activity relationships, substitution reactions and carbonyl reactions.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring

Pre-Requisite(s): CH 2420

CH 4490 - Current Topics in Organic Chemistry

Discussion of recent topics in organic chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4510 - Intermediate Physical Chemistry

Discussion of selected topics in molecular orbital theory, atomic and molecular spectroscopy, group theory, thermodynamics, statistical mechanics, the solid state, and other topics for students with previous coursework in physical chemistry.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): CH 3520

CH 4515 - Atmospheric Chemistry

Study of the photochemical processes governing the composition of the troposphere and stratosphere, with application to air pollution and climate change. Covers radical chain reaction cycles, heterogeneous chemistry, atmospheric radiative transfer, and measurement techniques for atmospheric gases.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Restrictions: May not be enrolled in one of the following Level(s): Graduate; Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): (CH 3510 and CH 3520(C)) or (CE 4501 and CE 4504)

CH 4519 - Transport and Transformation of Organic Pollutants

Assessment of factors controlling environmental fate, distribution, and transformation of organic pollutants. Thermodynamics, equilibrium, and kinetic relationships are used to quantify organic pollutant, partitioning, and transformations in air, water, and sediments. Use of mass balance equations to quantify pollutant transport.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall - Offered alternate years beginning with the 2009-2010 academic year

Restrictions: Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): CE 4501(C) or CH 3510

CH 4560 - Computational Chemistry

Focuses on the theory and method of modern computational techniques applied to the study of molecular properties and reactivity through lecture and computer projects. Covers classical mechanical as well as quantum mechanical approaches.

Credits: 3.0

Lec-Rec-Lab: (2-0-3)

Semesters Offered: Fall

Pre-Requisite(s): CH 3520

CH 4590 - Current Topics in Physical Chemistry

Discussion of recent topics in physical chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4610 - Introduction to Polymer Science

Introductory study of the properties of polymers. Includes structure and characterization of polymers in the solid state, in solution, and as melts. Topics include viscoelasticity, rubbery elasticity, rheology and polymer processing. Applications discussed include coatings, adhesives, and composites.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): CH 1120 or CH 1122 or (CH 1160 and CH 1161)

CH 4620 - Polymer Chemistry

Study of polymer chemistry dealing with the mechanisms of polymerization and copolymerization. Study of the chemistry of polymers, including polymer modification and degradation. Topics include methods for measuring and predicting the path of degradation and stabilization.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring

Pre-Requisite(s): CH 2400 or CH 2420

CH 4631 - Polymer Science Laboratory

Students undertake experiments covering aspects of polymer characterization, processing, and recycling. Also included are experiments in applications such as coatings, adhesives, and composites.

Credits: 2.0

Lec-Rec-Lab: (0-1-3)

Semesters Offered: Fall - Offered alternate years beginning with the 2008-2009 academic year

Pre-Requisite(s): CH 4610(C) or CM 4610(C)

CH 4690 - Current Topics in Polymer Chemistry

Discussion of current topics in polymer chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4710 - Biomolecular Chemistry I

Examines chemical concepts underlying biomolecules and bioprocesses and interconnections between biology and chemistry. Bioorganic mechanisms and biophysical concepts in biochemistry are emphasized. Topics include biomolecules including proteins and nucleic acids and bioprocesses including catalysis and gene action.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall

Pre-Requisite(s): CH 2420

CH 4720 - Biomolecular Chemistry II

Focuses on structural and chemical logic of bioprocesses with emphasis on bioorganic mechanisms and the interconnections between biology and chemistry. Topics include metabolic pathways, membrane biophysics, ion-channels, cell communication, transcriptional control and molecular biology.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Spring

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

Pre-Requisite(s): BL 4010 or CH 4710

CH 4721 - Research Methods in Biomolecular Chemistry

Lab course will emphasize the research process in biomolecular chemistry by actively involving students in question formulation, experimental design, data gathering, critical analysis, team work, and communication in an inquiry-based format. Students will employ methods used in modern biochemistry/molecular biology in a series of open-ended experiments that will lead to a student-developed original research project.

Credits: 3.0

Lec-Rec-Lab: (1-0-5)

Semesters Offered: Spring

Pre-Requisite(s): (CH 4710 and CH 4222) or CH 4212

CH 4790 - Current Topics in Biochemistry

Discussion of recent topics in biochemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of instructor required; May not be enrolled in one of the following Class(es): Freshman

CH 4800 - Current Topics in Undergraduate Chemistry

Covers chemistry topics not included in regular courses. Topics may include designing organic syntheses, heterogeneous catalysis, homogeneous catalysis, solid-state chemistry, and heterocyclic chemistry.

Credits: variable to 3.0; Repeatable to a Max of 12

Semesters Offered: On Demand

Restrictions: Permission of department required

CH 4810 - Design and Operation of a High School Chemistry Lab

Hands-on experience in the operation of a high school chemistry laboratory. Includes the design and preparation of experiments and demonstrations, setting up and maintaining a chemical storeroom, chemical waste disposal, and safety issues. Required for certification in the ACS chemistry/education concentration.

Credits: 2.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Spring

Pre-Requisite(s): (CH 2420 and CH 2421) or (CH 2400 and CH 2411) and CH 3020

CH 4900 - Senior Seminar in Chemistry I

Discussion of various topics relevant for professional development.

Credits: 1.0

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall, Spring

Restrictions: May not be enrolled in one of the following Level(s): Graduate; Must be enrolled in one of the following Class(es): Senior

CH 4910 - Senior Seminar in Chemistry II

Discussion of various topics relevant for professional development.

Includes preparation of abstracts and reports. Presentation of results of undergraduate research project or assigned library topic in written and oral form.

Credits: 1.0

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Spring

Restrictions: May not be enrolled in one of the following Level(s): Graduate; Must be enrolled in one of the following Class(es): Senior

CH 4990 - Undergraduate Research in Chemistry

An undergraduate research experience in which students select a literature and laboratory research problem and write a report on the work performed.

The student typically signs up for 1 to 3 credits per semester; most problems require more than one semester to complete. Requires GPA of 2.50 or better.

Credits: variable to 6.0; Repeatable to a Max of 12

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of department required

CH 4995 - Undergrad Research in Biochem

Undergraduate research experience in Biochemistry where students work in independent research project under the direction of a faculty advisor.

Credits: variable to 6.0; Repeatable to a Max of 12

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of department required