CHEMISTRY

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MAJOR IN CHEMISTRY

The Chemistry Department offers courses of study leading to the Bachelor of Arts degree in chemistry, the Bachelor of Science degree in chemistry, and the Bachelor of Science degree in secondary education. The bachelor of Science degree in chemistry offers concentrations in biochemistry, general chemistry, and environmental chemistry. The department also offers a B.S. to M.S. Accelerated Pathway, Chemistry.

A student must have a minimum 2.0 GPA in the chemistry major courses to graduate.

Bachelor of Arts Degree

The Bachelors of Arts Degree option is typical for a student who selects to complete a double major. Chemistry major course requirements are the same as those for the Bachelor of Science Degree.

Bachelor of Science Degree in Secondary Education

The major in chemistry is designed to develop a mastery of the unifying theories and principles in this field by means of a carefully-planned sequence of courses and related laboratory experiences. The program qualifies graduates for teaching in the secondary school and for professional positions in industry and government as well as to satisfy requirements for advanced study. The specific professional requirements for Initial Teaching Certification in Connecticut are listed in the secondary education section of the School of Education.
Accelerated B.S./M.S.

The accelerated B.S./M.S. in Chemistry allows students to complete an M.S. degree in Chemistry with one additional year beyond their B.S. degree. Both degrees must be completed at Southern Connecticut State University. Students work on the undergraduate chemistry degree requirements during their first three years as an undergraduate student and then apply to the accelerated M.S. degree program during the spring semester of their junior year. The fourth and fifth year requirements are outlined below although there may be some slight variation in the 300/400 level courses depending on the Chemistry courses that a student completes during their junior year. In order to complete the accelerated B.S./M.S. program in Chemistry, students must complete all requirements for the B.S. in Chemistry, as well as the courses outlined below.

Admission Requirements:

Students apply to the accelerated B.S./M.S. program during their junior year. Applications will be due by the Friday before spring break. In order to apply to the accelerated B.S./M.S. program, students must submit undergraduate transcripts (for any institution where they have taken undergraduate courses), a personal statement, and a letter of recommendation from a faculty member indicating that they will be willing to supervise the student's thesis research. The materials should be submitted to the Graduate Program Coordinator.

Senior Year:
CHE 435/436 — Inorganic Chemistry
CHE 445 — Chemical Hazards and Laboratory Safety
CHE 496 — Chemistry Seminar
CHE 586/587 — Chemistry Research
2 Chemistry courses at the 500 level

Fifth Year:
4 Chemistry courses at the 500 level
CHE 590 — Research
CHE 591 — Research Thesis

ACS Approved Degree in Chemistry

The Chemistry Department at Southern Connecticut State University is approved by the American Chemical Society (ACS) to certify to the society those students who complete the curriculum requirements as outlined in the ACS Guidelines. For a student to receive certification from the ACS in chemistry, the student must meet the requirements outlined in the Bachelor of Science degree in chemistry plus CHE 450; and any two of the following: CHE 340, 440, 451, 456, 490, or 491. Students in the Honor's Program must enroll for two semesters of research (HON 494, HON 495).
MAJOR IN CHEMISTRY (BIOCHEMISTRY CONCENTRATION)

The biochemistry concentration is designed for those students planning to pursue a career in biochemistry, either research or teaching, or for those students who are interested in entering medical or dental school. The beginning student should seek early counseling with respect to exact course sequence and selection.

MAJOR IN CHEMISTRY (ENVIRONMENTAL CONCENTRATION)

This specialization guides the student toward a bachelor's degree in chemistry with a special emphasis on environmental considerations. Students will learn about the relationship between specific chemical phenomena and the large environmental systems—biological, geological, and geographical—while preparing for careers in the chemical industry or the environmental field.

The following specializations are intended only to assist students in selecting areas and courses of interest:

**Medicinal Chemistry**

This specialization allows the student to obtain a bachelor's degree in chemistry with special preparation in the allied health sciences. Chemistry courses such as medicinal chemistry, or related courses such as microbiology, prepare the student for careers in clinical chemistry, pharmacology, medical technology, or basic medical research.

**Pre-Medical, Pre-Dental, or Pre-Veterinary Medicine**

This specialization guides the student toward a bachelor's degree in chemistry or biochemistry with an emphasis on a preparation for entrance into programs in medical school, dental school, and schools of veterinary medicine. Students specializing in this area are advised to register with the University Pre-Medical Committee.

**Residency Requirements**

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above for the various programs, majors must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

**Senior Research**

Permission to do senior research will be granted to students only if they have a minimum 3.0 GPA in their chemistry courses, or have successfully completed CHE 240, CHE 260-261, and CHE 370. The senior thesis requires completion of CHE 490, CHE 491 (or HON 494, HON 495 for students in the Honor's Program).
Course Equivalency Examinations

For information on the Course Equivalency Examinations, please refer to the Chemistry Department website: SouthernCT.edu/chemistry.
The department offers the following:

Chemistry, B.A. - Concentration: General
Chemistry, B.S. - Concentration: Biochemistry
Chemistry, B.S. - Concentration: Environmental Chemistry
Chemistry, B.S. - Concentration: General
Chemistry, B.S. - Concentration: General and B.S. to M.S. Accelerated Pathway
Chemistry 7-12, B.S.
Minor in Chemistry
CHEMISTRY, B.S. - CONCENTRATION: BIOCHEMISTRY

120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

48 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 2 - Natural World II: Life and Environment
BIO 103 - Biology II

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

40 Credits Required
Chemistry Requirements

26 Credits

GPA of 2.0 required in the major.

CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
CHE 240 – Analytical Chemistry
CHE 260 – Organic Chemistry I
CHE 261 – Organic Chemistry II
CHE 370 - Physical Chemistry I
CHE 435 — Inorganic Chemistry I

Concentration in Bio-Chemistry
14 Credits Required

CHE 450 – Biochemistry I
CHE 451 – Biochemistry II
CHE 456 - Medicinal Chemistry
or CHE 458 - Drug Discovery

One additional CHE course at 300-level or above.

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

COGNATE REQUIREMENTS

13 Credits Required

Requirements:  
BIO 102 - Biology I

Three additional BIO courses at 200-level or above.

FREE ELECTIVES

Remaining credits to reach Overall Credits Required (listed above).
CHEMISTRY, B.A. - CONCENTRATION: GENERAL

120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

47 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements ("W-Courses")

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

35 Credits Required
GPA of 2.0 required in the major

Requirements:
CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
CHE 240 – Analytical Chemistry
CHE 260 – Organic Chemistry I
CHE 261 – Organic Chemistry II
CHE 370 – Physical Chemistry I
CHE 371 – Physical Chemistry II
CHE 372 – Physical Chemistry Laboratory I
CHE 435 — Inorganic Chemistry I
CHE 436 — Inorganic Chemistry Lab
Select one additional CHE course at or above the 300-level

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

COGNATE REQUIREMENTS

8 Credits Required

Requirements:
MAT 151 – Calculus II
MAT 252 – Calculus III

FREE ELECTIVES

Remaining credits to reach Overall Credits Required (listed above).
CHEMISTRY, B.S. - CONCENTRATION: ENVIRONMENTAL CHEMISTRY

120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

48 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 2 - Natural World II: Life and Environment
MAR 210 - Coastal Marine Studies

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements ("W-Courses")

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in "W".

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

32 Credits Required
Chemistry Requirements:
26 Credits Required
2.0 GPA Required

CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
CHE 240 – Analytical Chemistry
CHE 260 – Organic Chemistry I
CHE 261 – Organic Chemistry II
CHE 370 – Physical Chemistry I
CHE 435 - Inorganic Chemistry I

Concentration in Environmental Chemistry
6 credits Required

CHE 436 - Inorganic Chemistry Lab
CHE 372 – Physical Chemistry Laboratory I
CHE 440 - Instrumental Methods of Analysis

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

COGNATE REQUIREMENTS

19 Credits Required

Requirements:
ESC 205 - Principles of Meteorology
MAR 250 - Introduction to Coastal Pollution
MAR 460 - Field and Laboratory Techniques in Marine Studies
MAT 151 – Calculus II
MAT 252 – Calculus III

FREE ELECTIVES

Remaining credits to reach Overall Credits Required (listed above).
CHEMISTRY, B.S. - CONCENTRATION: GENERAL

120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

47 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

39 Credits Required

Chemistry Requirements
26 Credits Required
GPA of 2.0 required in the major.
CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
CHE 240 – Analytical Chemistry
CHE 260 – Organic Chemistry I
CHE 261 – Organic Chemistry II
CHE 370 – Physical Chemistry I
CHE 435 — Inorganic Chemistry I

**Concentration in General Chemistry**
13 Credits Required

CHE 371 – Physical Chemistry II
CHE 372 – Physical Chemistry Laboratory I
CHE 373 – Physical Chemistry Laboratory II
CHE 436 — Inorganic Chemistry Lab
Select two additional CHE course at or above the 300-level

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

**COGNATE REQUIREMENTS**

12 Credits Required

Requirements:
PHY 231 – Physics for Scientists and Engineers II
MAT 151 – Calculus II
MAT 252 – Calculus III

**FREE ELECTIVES**

Remaining credits to reach Overall Credits Required (listed above).
CHEMISTRY, B.S. - CONCENTRATION: B.S. TO M.S. ACCELERATED PATHWAY

The B.S. in Chemistry (Concentration: B.S. to M.S. Accelerated Pathway) provides high-achieving students with the opportunity to complete foundational graduate coursework during their senior year of undergraduate study in order to accelerate graduate degree completion. This competitive program allows admitted students the opportunity to complete both their bachelor's degree and the M.S., Chemistry (Accelerated) in five years at Southern Connecticut State University. This program has a separate admissions process and eligible students are encouraged to apply no later than their junior year of undergraduate study. Please consult the admission requirements in the undergraduate catalog and below for more information.

120 Overall Credits Required

Overall GPA of 3.0 is required

APPLICATION PROCESS

Undergraduate freshmen and transfer applicants will select the appropriate degree program and accelerated pathway concentration for their particular discipline when applying through the Common App. Current students who are already matriculated in a program at Southern must be accepted into the undergraduate portion of the accelerated pathway through department permission via the Selection of degree system. Undergraduate students must declare their intention to join an Accelerated Pathway Program no later than their junior year. Eligible students in the accelerated pathway program will then apply for early acceptance graduate admission no later than the spring semester of their senior year. During the application process, students will select both the graduate degree for their specified discipline and the accelerated pathway concentration. Please note that acceptance into the undergraduate Accelerated Pathway does not automatically guarantee admission to the graduate Accelerated Pathway. Students should contact their faculty advisor regularly to ensure that they are meeting all requirements for graduate admission.

ADMISSION REQUIREMENTS

New students seeking admission to Southern Connecticut State University should apply online through the Office of Undergraduate Admissions website:

https://www.southernct.edu/admissions/undergraduate

Currently matriculated students must meet and maintain the following department requirements in order to be admitted to and remain in the program:

• An undergraduate GPA of 3.0.
Liberal Education Program

47 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

44 Credits Required
GPA of 2.0 required in the major

Chemistry Requirements
26 Credits Required

CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
CHE 240 – Analytical Chemistry
CHE 260 – Organic Chemistry I
CHE 261 – Organic Chemistry II
CHE 370 – Physical Chemistry I
CHE 435 — Inorganic Chemistry I

BS to MS Accelerated Pathway
18 Credits Required
Graduate courses require a grade of 'C' or higher

CHE 371 – Physical Chemistry II
CHE 372 – Physical Chemistry Laboratory I
CHE 373 – Physical Chemistry Laboratory II
CHE 436 — Inorganic Chemistry Lab
CHE 586 - Chemistry Research I
CHE 587 - Chemistry Research II

Select two additional graduate CHE courses at the 500-level or above.

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

COGNATE REQUIREMENTS

12 Credits Required

Requirements:
PHY 231 – Physics for Scientists and Engineers II
MAT 151 – Calculus II
MAT 252 – Calculus III

FREE ELECTIVES

Remaining credits to reach Overall Credits Required (listed above).
CHEMISTRY 7-12, B.S.

This program has a separate admission process. Please consult the admission requirements for this program on the School of Education page for more information.

Overall GPA of 2.7 Required
120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

47 Credits Required

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, some departments require that students select specific courses to complement their major. This major has specific Tier requirements/restrictions for the following:

Tier 1 - Quantitative Reasoning:
MAT 150 – Calculus I

Tier 2 – American Experience (select one):
HIS 110 – United States History I
HIS 111 – United States History II

Tier 2 – Mind and Body:
SHE 203 – School Health

Tier 2 – Natural World I: Physical Realm:
PHY 230 – Physics for Scientists and Engineers I

Tier 2 - Social Structure, Conflict, and Consensus
EDU 200 - Teachers, Schools, and Society

Tier 3 – Capstone (all three required):
CHE 301 – The Preparation of Scientific Documents for Chemistry
CHE 445 – Chemical Hazards and Laboratory Safety
CHE 496 – Chemistry Seminar

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

MAJOR REQUIREMENTS

61 Credits Required

Chemistry Requirements
34 Credits Required
GPA of 2.0 required in the major

Requirements:

- CHE 120 – General Chemistry I
- CHE 121 – General Chemistry II
- CHE 240 – Analytical Chemistry
- CHE 260 – Organic Chemistry I
- CHE 261 – Organic Chemistry II
- CHE 370 – Physical Chemistry I
- CHE 371 – Physical Chemistry II
- CHE 372 – Physical Chemistry Laboratory I
- CHE 435 — Inorganic Chemistry I
- CHE 436 — Inorganic Chemistry Lab
- Select one CHE course at or above the 300-level

In order to receive a degree in chemistry from Southern Connecticut State University, along with satisfying the requirements listed above students must complete a minimum of 16 credits of advanced chemistry courses (300 level or above) at SCSU.

Education Requirements
27 Credits Required

Requirements:

- EDU 316 - Child Development and Psychology for Educators
- EDU 413 – Secondary Education
- EDU 471 - Supporting English Learners for School Success (formerly IDS 471)
- RDG 470 - Literacy in the content Areas (formerly IDS 471)
- SCE 490 – Science (Secondary School)
- SCE 494 – Student Teaching (Science)
- SCE 496 – Student Teaching Seminar (Science)
- SED 482 – Teaching Exceptional Students in the Secondary Education Classroom

Non-Course Requirements:
Module 1: Behavioral Difficulties (Social and Emotional Development)
Module 2: Dyslexia

COGNATE REQUIREMENTS
12 Credits Required

Requirements:
PHY 231 – Physics for Scientists and Engineers II
MAT 151 – Calculus II
MAT 252 – Calculus III

FREE ELECTIVES

Students must take remaining credits to reach Overall Credits Required (listed above).
COURSES

CHE 101 - Chemistry in Contemporary Issues
A conceptual approach to the basics of chemistry with emphasis on current environmental, social, political, and ethical issues. Some of the topics are air pollution, global warming, ozone depletion, acid rain, and nuclear energy. Lecture 3 hours; laboratory, 2 hours.
Prerequisite(s): MAT 100 or MAT 100P or placement in MAT 112 or higher.
Last Offered: Fall 2019
4 credits

CHE 103 - Crime Scene Chemistry
A forensic science perspective on the fundamental concepts of chemistry with emphasis on applications of scientific methods to criminal investigations. Some of the topics are atomic clues, chemical evidence, drug chemistry, chemistry of addiction, chemistry of explosions, and poisons. Lecture, 3 hours; laboratory, 2 hours.
Prerequisite(s): MAT 100 or MAT 100P or placement in MAT 112 or higher.
Last Offered: Spring 2020
4 credits

CHE 120 - General Chemistry I
Atomic structure, gas laws, valence, solutions, ionization, redox reaction, activity series, periodic classification, kinetics, equilibrium, acid-base chemistry, electrochemistry. Lecture, 3 hours; laboratory, 3 hours; recitational session, 1 hour.
Prerequisite(s): MAT 100 or MAT 100P or placement in MAT 112 or higher.
Last Offered: Spring 2020
4 credits

CHE 121 - General Chemistry II
Atomic structure, gas laws, valence, solutions, ionization, redox reaction, activity series, periodic classification, kinetics, equilibrium, acid-base chemistry, electrochemistry. Lecture, 3 hours; laboratory, 3 hours; recitational session, 1 hour.
Prerequisite(s): CHE 120.
Last Offered: Spring 2020
4 credits

CHE 125 - Principles and Applications of General, Organic and Biochemistry
Fundamental aspects of general, organic, and biochemistry with particular applications to the health professions. This course will not fulfill the prerequisites for any other course in the Chemistry Department. Lecture, 3 hours; laboratory, 3 hours; recitational session, 1 hour.
Prerequisite(s): CHE 120.
Last Offered: Spring 2020
4 credits

CHE 240 - Analytical Chemistry
In lectures, discussion, and laboratory classes, students develop skills using instruments to analyze inorganic compounds by gravimetric, volumetric, electrometric, and colorimetric methods. Lecture, 3 hours; laboratory, 4 hours.
Prerequisite(s): CHE 121.
Last Offered: Fall 2019
4 credits

CHE 260 - Organic Chemistry I
Introduction to organic chemistry. Topics include the nomenclature, study of alkanes, modern spectroscopic techniques (including NMR, IR, and MS), stereochemistry and conformational analysis of organic molecules, and reactions and mechanisms of alkenes, alkynes, and alkyl halides. Lecture, 3 hours; laboratory, 4 hours.
Prerequisite(s): CHE 121.
Last Offered: Fall 2019
4 credits
CHE 261 - Organic Chemistry II
Discussion of nucleophilic substitution and elimination reactions and mechanisms. Nomenclature, characteristic reactions and mechanisms of alcohols, ethers, thiols, aldehydes, ketones, carboxylic acid derivatives, aromatic systems, and amines are covered. Lecture, 3 hours; laboratory, 4 hours.
Prerequisite(s): CHE 260.
Last Offered: Spring 2020
4 credits

CHE 262 - Organic Chemistry I: Lecture Only
Identical to CHE 260, but without the laboratory. Does not satisfy requirement in Chemistry B.S. or B.A. programs, nor does it satisfy requirements for entrance into most medical, dental, or veterinary schools.
Prerequisite(s): CHE 121.
Last Offered: Fall 2019
3 credits

CHE 263 - Organic Chemistry II: Lecture Only
Identical to CHE 261, but without the laboratory. Does not satisfy requirement in Chemistry B.S. or B.A. programs, nor does it satisfy requirements for entrance into most medical, dental, or veterinary schools.
Prerequisite(s): CHE 260 or CHE 262.
Last Offered: Summer 2018
3 credits

CHE 264 - Organic Chemistry I: Lab Only
Identical to CHE 260, but without the lecture. Introduction to synthetic techniques, lab calculations, and spectroscopy (NMR, IR, and MS). Laboratory: 4 hours.
Prerequisite(s): CHE 262.
Last Offered: not yet offered
1 credits

CHE 265 - Organic Chemistry II: Lab Only
Identical to CHE 261, but without the lecture. Reinforcement of synthetic techniques, lab calculations, and spectroscopy (NMR, IR, and MS). In-depth study of the reactivity of functional groups, reaction mechanisms, and multi-step synthesis. Laboratory: 4 hours.
Prerequisite(s): CHE 263 and CHE 264.
Last Offered: not yet offered
1 credits

CHE 290 - Introduction to Chemistry Research
Experimental research supervised by a member of the chemistry department.
Prerequisite(s): CHE 120 and CHE 121.
Last Offered: Fall 2019
3 credits

CHE 301 - The Preparation of Scientific Documents for Chemistry
Introduction to the use of current software technology and appropriate style guides for the preparation of professional reports in the field of chemistry. Includes the use of standard word processing, generation of tables, graphs, and diagrams.
Prerequisite(s): CHE 120 and CHE 121, Chemistry majors only, department permission, 6 of 8 Tier 2 complete (Honors Coll.: 15 cr. HON or 45 cr. total), and prior or concurrent completion of all Tier 1 (Honors Coll.: T1MC and T1QR only).
Last Offered: Spring 2020
1 credits

CHE 340 - Environmental Chemistry
A study of the chemistry of air, water and soil as well as the various sources of energy and industrial and municipal waste treatment. Cannot be used for graduate credit by chemistry majors. Lecture, 3 hours.
Prerequisite(s): CHE120 and CHE 121.
Last Offered: Spring 2019
3 credits
CHE 370 - Physical Chemistry I
The properties of gases, chemical thermodynamics, phase and chemical equilibria and solutions.
Prerequisite(s): PHY 230 and MAT 150
Last Offered: Fall 2019
3 credits

CHE 371 - Physical Chemistry II
Discussion of electrochemistry and chemical kinetics. Introduction to quantum mechanics as applied to the electronic structure of atoms and molecules and to spectroscopy. Lecture, 3 hours.
Prerequisite(s): CHE 370, PHY 231 and MAT 252 (may be taken concurrently).
Last Offered: Spring 2020
3 credits

CHE 372 - Physical Chemistry Laboratory I
Laboratory experiments that reinforce the lecture material covered in CHE 370.
Prerequisite(s): CHE 370 (may be taken concurrently).
Last Offered: Fall 2019
1 credits

CHE 373 - Physical Chemistry Laboratory II
Laboratory experiments and computational quantum chemistry exercises that reinforce the lecture material covered in CHE 371.
Prerequisite(s): CHE 371 (may be taken concurrently) and CHE 372.
Last Offered: Spring 2020
1 credits

CHE 374 - Physical Chemistry for the Life Sciences
A study of thermodynamics, chemical kinetics, quantum mechanics, and spectroscopy with particular applications to biological systems and processes.
Prerequisite(s): CHE 261 and MAT 150 and PHY 230.
Last Offered: Spring 2017
3 credits

CHE 411 - Chemical Education
Discussion of various issues, activities, and research in chemical education including the history of curricula, student and teacher knowledge and beliefs, ethics in science, the cognitive basis of science learning, and related instructional approaches. Assignments require reading, writing, discussion, and reflection on current issues and trends in chemical education as well as scientific ethics.
Prerequisite(s): CHE 121.
Last Offered: Winter 2019-20
3 credits

CHE 435 - Inorganic Chemistry I
Discussion of the electronic structure, symmetry, group theory, and bonding theories as they apply to the properties and reactions of the elements and their compounds found on the periodic chart.
Lecture: 3 hours.
Prerequisite(s): CHE 261.
Last Offered: Spring 2020
3 credits

CHE 436 - Inorganic Chemistry Lab
Application of the theory of inorganic chemistry to methods of air free synthesis and manipulation of chemical compounds, characterization of inorganic and catalytic products using spectroscopic and physical methods. Laboratory: 4 hours.
Prerequisite(s): CHE 240 and CHE 435.
Last Offered: Spring 2020
1 credits

CHE 440 - Instrumental Methods of Analysis
Introduction to the theoretical background and practical use of modern instruments in the analytical laboratory. Work in spectrophotometry, chromatography, and electrochemistry. Lecture, 3 hours; laboratory, 4 hours.
Prerequisite(s): CHE 240 and CHE 260 and CHE 261.
Last Offered: Spring 2020
4 credits
CHE 445 - Chemical Hazards and Laboratory Safety

The study of the principles and methods of handling hazardous materials in the laboratory. Coverage includes: the nature and scope of hazards in the laboratory, overview of applicable regulations fundamentals of chemical hygiene, safety data sheets, and chemical toxicity. Prerequisite(s): Chemistry major, senior status, 6 of 8 Tier 2 complete (Honors Coll: 15 cr. HON or 45 cr. total), and prior or concurrent completion of all Tier 1 (Honors Coll: T1MC and T1QR only). Last Offered: Spring 2020

1 credits

CHE 450 - Biochemistry I

Introduction to biochemistry. Chemistry of biological equilibria, bioenergetics, proteins, carbohydrates, enzymes, and metabolic pathways. Lecture, 3 hours; laboratory, 4 hours. Prerequisite(s): CHE 261. Last Offered: Fall 2019

4 credits

CHE 451 - Biochemistry II

Chemistry of lipids, cell membranes, nucleic acids, and signal transduction. Lecture, 3 hours; laboratory, 4 hours. Prerequisite(s): CHE 450. Last Offered: Spring 2020

4 credits

CHE 456 - Medicinal Chemistry

A survey of the main classes of drugs with emphasis upon their structures, structure-activity relationships, effects, side effects, and syntheses. Lecture, 3 hours. Prerequisite(s): CHE 260 and CHE 261. Last Offered: Winter Session 2019

3 credits

CHE 458 - Drug Discovery

An introduction to the field of drug discovery and a comprehensive overview of the process. Students learn about the qualities that a viable drug candidate should possess and gain hands-on experience in a variety of methods such as LC/MSS, macromolecular visualization, ligand docking, and interpretation of biological screening data. Prerequisite(s): CHE 261. Last Offered: Winter 2019-20

3 credits

CHE 490 - Chemistry Research

Experimental research supervised by a member of the chemistry department. Prerequisite(s): Senior status and permission of research advisor. Last Offered: Fall 2019

3 credits

CHE 491 - Chemistry Research

Experimental research supervised by a member of the chemistry department. Only seniors may register for this course with written permission from their research adviser. Last Offered: Fall 2019

3 credits

CHE 496 - Chemistry Seminar

The study of the nature of the chemical literature and the vital role that the literature plays in the development of chemistry. Students conduct literature searches in the different areas of chemistry and present seminars based on these searches. Lecture, 1 hour. Prerequisite(s): Senior status, 6 of 8 Tier 2 complete (Honors Coll: 15 cr. HON or 45 cr. total), and prior or concurrent completion of all Tier 1 (Honors Coll: T1MC and T1QR only). Last Offered: Fall 2019

1 credits
CHE 498 - Special Topics in Chemistry

Study of current topics of importance in chemistry.
Prerequisite(s): CHE 260 and CHE 261 and other prerequisites as required by the subject matter.
Last Offered: Fall 2019
1 to 4 credits

CHE 499 - Independent Study and Research

No Description Available
Prerequisite(s): Departmental permission.
Last Offered: Fall 2019
1 to 3 credits