

CHEMISTRY

Chemistry Program Learning Outcomes (<https://catalog.csudh.edu/program-learning-outcomes/natural-behavioral-sciences/biochemistry-chemistry-program-learning-outcomes/>)

College of Natural and Behavioral Sciences

Department of Chemistry and Biochemistry

Bachelor of Arts

Biochemistry Option

General Chemistry Option

Bachelor of Science

Degree Roadmap

Minor

Organic/Biochemistry

Faculty

Kenneth R. Rodriguez, Department Chair

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Staff

Laboratory Technicians: Anthony Diaz (Led Lab Technician), Justin Hathaway, and Amber M. Rivas

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Emeriti Faculty

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Department Mission Statement

The California State University Dominguez Hills (CSUDH) Chemistry and Biochemistry department provides world class academic excellence across the chemical society by engaging a diverse student body and faculty that will strive for the finest quality of service in a dynamic learning environment to provide cutting edge research and from the University community prepare the next generation of critical thinkers, scientists, and industry leaders.

Program Description

The Department of Chemistry and Biochemistry offers majors leading to a Bachelor of Science or a Bachelor of Arts Degree. The B.A. Degree also has a Biochemistry Option. The Bachelor of Science in Chemistry is designed primarily for students who plan to enter graduate programs in chemistry or other closely related sciences. The department is approved by the American Chemical Society (ACS), 1155 - Sixteenth Street, N.W., Washington, DC, 20036. Students graduating with this degree will be certified to the Society and will receive a certificate from the ACS. The Bachelor of Arts in Chemistry fulfills the need of those students who are pursuing pre-medical or pre-dental programs as well as those who plan to enter fields such as business, environmental or patent law, where a background in chemistry can be of great utility.

Features

The department is housed in well-equipped offices and laboratories on the third floor of the Natural Sciences and Mathematics Building. The faculty consists of full-time members who represent all the major

areas of chemistry. Students generally benefit from the smaller class sizes and the individualized attention, which is seldom available at large universities. Students are introduced to modern instrumental techniques and are given many opportunities for "hands-on" experience.

Academic Advising

Students who are majoring in chemistry should be advised once each semester, prior to registration. Permanent records of advisement are kept in the department office.

Preparation

High school students should include two years of algebra, one year of geometry and a one-year course in chemistry in their high school preparation. A course in high school physics also is recommended. Students who enter without this preparation must expect to delay their graduation beyond the minimum time-period of four years.

Community college transfers should have completed one year of general chemistry, one year of calculus and one year of physics.

Career Possibilities

A Major in Chemistry either as a B.A. or B.S. will prepare students for graduate work in chemistry or biochemistry; teaching chemistry in secondary schools; employment with industry or government; entry into professional schools such as medicine or dentistry; or entry into law school with a view toward specialization in patent or environmental law.

Students may prepare for a career in teaching science at the secondary level (junior high or high school) by completing an approved "Subject Matter Preparation Program." Completion of such a program is the first step in meeting the state requirements for a teaching credential. As the program requirements for the "Subject Matter Preparation Program" in science have changed recently, interested students should consult the departmentally designated advisor for current information.

Pre-Medical Professions Training in Biochemistry

Students who wish to apply to professional schools of medicine, dentistry, veterinary medicine, or other medical areas following graduation should consider completing the requirement for a B.S. degree in Biochemistry. In addition, students should complete the elective course that was not selected to fulfill the degree requirements.

The following courses are not usually required for admission to medical school, but it is recommended that students consider them when planning their academic program. Many former students have found them to be a valuable introduction to courses that must be taken in many professional programs.

BIO 422 Histology (3)

BIO 424 Histology Laboratory (1)

BIO 453 Endocrinology (3)

BIO 483 Human Physiology (3)

Student Organizations

Membership in the Science Society of CSU Dominguez Hills is open to all students. The Society encompasses all of the scientific disciplines and is also a Student Affiliate Chapter of the American Chemical Society. It was founded to serve the interests and concerns of science students and sponsors scientific, educational, professional and social activities.

The American Chemical Society has commended the Science Society for the high quality of its activities and programs. Contact the Department of Chemistry and Biochemistry for further information.

Graduation With Honors

An undergraduate student may be a candidate for graduation with Honors in Chemistry provided he or she meets the following criteria:

1. A minimum of 36 units in residence at CSU Dominguez Hills;
2. A minimum grade point average of at least 3.5 in all courses used to satisfy the upper division requirements in the major;
3. Recommendation by the faculty in the department or program in which the honors are to be awarded.

Bachelor of Arts in Chemistry

Total Course Requirements for the Bachelor's Degree

See the "Requirements for the Bachelor's Degree (<https://catalog.csudh.edu/general-information/baccalaureate-degrees-undergraduate-studies/>)" in the University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

Elective Requirements

Completion of elective courses (beyond the requirements listed below) to reach a total of a minimum of 120 units.

General Education Requirements (49 units)

See the "General Education (<https://catalog.csudh.edu/general-information/double-counting-general-education-courses/general-education/>)" requirements in the University Catalog or the Class Schedule for the most current information on General Education requirements and course offerings.

Graduation Writing Assessment Requirement

See the "Graduation Writing Assessment Requirement (<https://catalog.csudh.edu/general-information/graduate-writing-examination/>)" in the University Catalog.

Minor Requirements

No minor required.

Major Requirements (60-62 units)

Students must select one of the options listed. The following courses, or their approved transfer equivalents, are required of all candidates for this degree. A grade of "C" or better must be achieved in all courses.

Each B.A. Chemistry major must select one of the options listed below.

Biochemistry Option (62-64 units)

A. Lower Division Required Courses (30-32 units)

CHE 110 General Chemistry I (5)
 CHE 112 General Chemistry II (5)
 CHE 230 Quantitative Analysis (4)
 MAT 191 Calculus I (5)
 MAT 193 Calculus II (5)
 PHY 130 General Physics I (5)
 and
 PHY 132 General Physics II (5)
 or
 PHY 120 Elements Of Physics I (4)
 and
 PHY 122 Elements Of Physics II (4)

B. Upper Division Required Courses (30 units)

CHE 310 Organic Chemistry I (4)
 CHE 311 Organic Chemistry Lab I (1)
 CHE 312 Organic Chemistry II (3)
 CHE 313 Organic Chemistry Laboratory II (2)
 CHE 320 Physical Chemistry I (5)
 CHE 420 Advanced Applic for Chemistry (2)
 CHE 450 Biochemistry I (4)
 CHE 451 Biochemistry I Lab (1)
 CHE 452 Biochemistry II (4)
 CHE 453 Biochemistry II Lab (2)
 CHE 460 Chemical Literature (2)

General Chemistry Option (63 units)

A. Lower Division Required Courses (34 units)

CHE 110 General Chemistry I (5)
 CHE 112 General Chemistry II (5)
 CHE 230 Quantitative Analysis (4)
 MAT 191 Calculus I (5)
 MAT 193 Calculus II (5)
 PHY 130 General Physics I (5)
 PHY 132 General Physics II (5)

B. Upper Division Required Courses (29 units)

CHE 310 Organic Chemistry I (4)
 CHE 311 Organic Chemistry Lab I (1)
 CHE 312 Organic Chemistry II (3)
 CHE 313 Organic Chemistry Laboratory II (2)
 CHE 320 Physical Chemistry I (5)
 CHE 322 Physical Chemistry II (3)
 CHE 420 Advanced Applic for Chemistry (2)
 CHE 431 Adv Integrated Lab I Lec (3)
 CHE 440 Inorganic Chemistry (4)
 CHE 460 Chemical Literature (2)

CHE 450 Biochemistry I (4): Major students may substitute this course for General Education Area E. Please contact the University Advisement Center to request the course substitution.

Bachelor of Science in Chemistry

Total Course Requirements for the Bachelor's Degree

See the "Requirements for the Bachelor's Degree (<https://catalog.csudh.edu/general-information/baccalaureate-degrees-undergraduate-studies/>)" in the University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

Elective Requirements

Completion of elective courses (beyond the requirements listed below) to reach a total of a minimum of 120 or a maximum of 132 units.

General Education Requirements (49 units)

See the "General Education (<https://catalog.csudh.edu/general-information/double-counting-general-education-courses/general-education/>)" requirements in the University Catalog or the Class Schedule for the most current information on General Education requirements and course offerings.

Graduation Writing Assessment Requirement

See the "Graduation Writing Assessment Requirement (<https://catalog.csudh.edu/general-information/graduate-writing-examination/>)" in the University Catalog.

Minor Requirements

Single field major, no minor required.

Major Requirements (79 units)

The following courses, or their approved transfer equivalents, are required of all candidates for this degree. A grade of "C" or better must be achieved in all courses.

A. Lower Division Required Courses (39 units)

CHE 110 General Chemistry I (5)
 CHE 112 General Chemistry II (5)
 CHE 230 Quantitative Analysis (4)
 MAT 191 Calculus I (5)
 MAT 193 Calculus II (5)
 MAT 211 Calculus III (5)
 PHY 130 General Physics I (5)
 PHY 132 General Physics II (5)

B. Upper Division Required Courses (40 units)

CHE 310 Organic Chemistry I (4)
 CHE 311 Organic Chemistry Lab I (1)
 CHE 312 Organic Chemistry II (3)
 CHE 313 Organic Chemistry Laboratory II (2)
 CHE 320 Physical Chemistry I (5)
 CHE 322 Physical Chemistry II (3)
 CHE 420 Advanced Applic for Chemistry (2)
 CHE 431 Adv Integrated Lab I Lec (3)
 CHE 433 Adv Integrated Lab II Lec (3)
 CHE 440 Inorganic Chemistry (4)
 CHE 450 Biochemistry I (4)
 CHE 451 Biochemistry I Lab (1)
 CHE 460 Chemical Literature (2)
 PHY 333 Analog Electronics (3)

CHE 450 Biochemistry I (4): Major students may substitute this course for General Education Area E. Please contact the University Advisement Center to request the course substitution.

Minor in Organic/Biochemistry (29 units)**Requirements****A. Lower Division Required Courses (14 units)**

CHE 110 General Chemistry I (5)
 CHE 112 General Chemistry II (5)
 CHE 230 Quantitative Analysis (4)

B. Upper Division Required Courses (15 units)

CHE 310 Organic Chemistry I (4)
 CHE 311 Organic Chemistry Lab I (1)
 CHE 312 Organic Chemistry II (3)
 CHE 313 Organic Chemistry Laboratory II (2)
 CHE 450 Biochemistry I (4)
 CHE 451 Biochemistry I Lab (1)
 CHE 452 Biochemistry II (4)
 and
 CHE 453 Biochemistry II Lab (2)
 or
 CHE 456 Clinical Chemistry (3)

Note: All Biological Science Majors who have used CHE 450 Biochemistry I (4) and CHE 451 Biochemistry I Lab (1) to fulfill requirements for their major must take either: CHE 452 Biochemistry II (4) and CHE 453

Biochemistry II Lab (2). Biochemistry Lab II (2) or CHE 456 Clinical Chemistry (3)

Specific Chemistry Subject Matter Authorization (38 units)

Holders of a Single Subject or Multiple Subject credential issued by the California Commission on Teacher Credentialing may secure a Specific Chemistry Subject Matter Authorization that allows the holder to teach the specific subjects in grades preschool, K-12, and classes organized primarily for adults.

For other requirements governing issuance of this authorization, consult the Teacher Education section of this catalog or contact the School of Education Student Services Center.

Requirements

Complete each of the following courses or equivalent as approved by the Chemistry Department Advisor.

A. Prerequisites

MAT 191 Calculus I (5)
 MAT 193 Calculus II (5)

B. Lower Division (14 units)

CHE 110 General Chemistry I (5)
 CHE 112 General Chemistry II (5)
 CHE 230 Quantitative Analysis (4)

C. Upper Division (24 units)

CHE 310 Organic Chemistry I (4)
 CHE 311 Organic Chemistry Lab I (1)
 CHE 312 Organic Chemistry II (3)
 CHE 313 Organic Chemistry Laboratory II (2)
 CHE 320 Physical Chemistry I (5)
 CHE 420 Advanced Applic for Chemistry (2)
 CHE 450 Biochemistry I (4)
 CHE 451 Biochemistry I Lab (1)
 CHE 460 Chemical Literature (2)