CHEMISTRY, BS - ACS CERTIFIED

Introduction

Please click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/chemistry/) to see Chemistry Department information.

The Chemistry Department offers two options for a chemistry degree: a BS Chemistry or a BS Chemistry ACS Certified. Students interested in the chemistry major should consult regularly with the chemistry major advisor, Dr. Marta K. Maroń (marta.maron@ucdenver.edu). The Advisor can help you select the track that best fits your future goals. A complete description of the chemistry major programs may be obtained in the Department of Chemistry office (Science 3071) or Department website.

Qualified majors are strongly urged to participate in directed research with a research faculty member and in the departmental honors program. We also strongly encourage chemistry majors to participate in the Department by serving as graders, learning assistants, and/or teaching assistants. Contact the chemistry major advisor for more information and/or questions.

Students planning chemistry as a career should be familiar with the recommendations of the American Chemical Society (ACS) for the professional training of chemists. The ACS certification requires students following the BS program of study take foundation courses in the five sub-disciplines of chemistry: analytical chemistry, biochemistry, inorganic chemistry, organic chemistry and physical chemistry. In addition, students take an in-depth (second semester) course in four out of the five sub-disciplines and are required to complete 400 hours of laboratory work post General Chemistry Laboratories. Laboratory work has to encompass four of the five sub-disciplines. General Chemistry I and II with laboratories are considered introductory courses and are prerequisites to foundation courses. No chemistry course with a grade of less than C (2.0) can be applied toward ACS certification. Students should check with the undergraduate chemistry major Advisor for details.

These degree requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Delivery

This is an on-campus program.

Declaring This Major

- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#policiestext) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/)
- CU Denver Core Curriculum (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/)
- College of Liberal Arts & Sciences Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#graduationrequirementstext)
- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/) for information about Academic Policies

Program Requirements

1. Students must complete a total of 72 credit hours, including a minimum of 50 CHEM credit hours.
2. Students must complete a minimum of 16 upper division level (3000-level and above) CHEM credit hours.
3. Students must earn a minimum grade of C (2.0) in all courses that apply to the major and must achieve a minimum cumulative major GPA of 2.0. All graded attempts in required and elective courses are calculated in the major GPA. Courses taken using P+/P/F or S/U grading cannot apply to major requirements.
4. Students must complete a minimum of 14 CHEM credit hours with CU Denver faculty, including CHEM 4128 Instrumental Analysis Laboratory, CHEM 4518 Physical Chemistry Laboratory: Reaction Analysis or CHEM 4538 Physical Chemistry Laboratory: Molecular Structure.

Program Restrictions, Allowances and Recommendations

1. A student who has declared a chemistry major at CU Denver may not take additional chemistry courses outside of the department for the purpose of applying those credits toward meeting the requirements of the major without prior written approval of the undergraduate advisor. No more than 3 additional hours of such pre-approved transfer credits will be allowed.
2. All courses applied to the chemistry major need to be taken within ten years of the graduation date with the exception of General Chemistry I Lecture CHEM 2031 General Chemistry I or CHEM 2081 Honors General Chemistry I and Laboratory CHEM 2038 General Chemistry Laboratory I or CHEM 2039 Majors General Chemistry I Laboratory or CHEM 2088 Honors General Chemistry I Laboratory and General Chemistry II Lecture CHEM 2061 General Chemistry II or CHEM 2091 Honors General Chemistry II Lecture and Laboratory CHEM 2068 General Chemistry II Laboratory or CHEM 2069 Majors General Chemistry II Laboratory or CHEM 2098 Honors General Chemistry II Laboratory. In the event that the student would like to apply for expired credit for Organic I Lecture CHEM 3481 Majors Organic Chemistry I, the student will need to test at the 50th percentile on the ACS Standardized Exam for Organic Chemistry I.
3. PHYS 2321 Intro Experimental Phys Lab I and PHYS 2341 Intro Experimental Phys Lab II are specifically designed for students in non-Physics majors and can be paired with either PHYS 2010 College Physics I and PHYS 2020 College Physics II or PHYS 2311 General Physics I: Calculus-Based and PHYS 2331 General Physics II: Calculus-Based lectures. Students pursuing a second major in Physics should complete PHYS 2311 General Physics I: Calculus-Based and PHYS 2331 General Physics II: Calculus-Based and PHYS 2351 Applied Physics Lab I and PHYS 2361 Applied Physics Lab II.

4. Students may double major in Biochemistry and Chemistry. Students can apply the requirements for both majors, if the respective courses are a major requirement for both the Chemistry and Biochemistry major. Students must select unique Chemistry or Biochemistry elective courses to satisfy elective course credit requirements for both majors. A course cannot fulfill more than two requirement/elective areas in a student's degree.

Code	Title	Hours
Complete all of the following required CHEM courses:		*51*
CHEM 2031	General Chemistry I	
or CHEM 203	Honors General Chemistry I	
CHEM 2039	Majors General Chemistry I Laboratory	
or CHEM 203	General Chemistry Laboratory I	
or CHEM 208	Honors General Chemistry I Laboratory	
CHEM 2061	General Chemistry II	
or CHEM 20	Honors General Chemistry II Lecture	
CHEM 2069	Majors General Chemistry II Laboratory	
or CHEM 206	General Chemistry Laboratory II	
or CHEM 209	Honors General Chemistry II Laboratory	
CHEM 3011	Inorganic Chemistry	
CHEM 3018	Inorganic Chemistry Laboratory	
CHEM 3111	Analytical Chemistry	
CHEM 3118	Analytical Chemistry Laboratory	
CHEM 3481	Majors Organic Chemistry I	
CHEM 3488	Majors Organic Chemistry Laboratory I	
CHEM 3491	Majors Organic Chemistry II	
CHEM 3498	Majors Organic Chemistry Laboratory II	
CHEM 4121	Instrumental Analysis	
CHEM 4128	Instrumental Analysis Laboratory	
CHEM 4500	Foundations of Physical Chemistry [1]	
CHEM 4511	Physical Chemistry: Thermodynamics and Kinetics	
CHEM 4518	Physical Chemistry Laboratory: Reaction Analysis	
CHEM 4521	Physical Chemistry: Quantum and Spectroscopy	
CHEM 4538	Physical Chemistry Laboratory: Molecular Structure	
CHEM 4810	General Biochemistry I	
or CHEM 381	Biochemistry	
or CHEM 581	Graduate Biochemistry I	
Complete one of the following upper division Chemistry lecture elective courses:		*3*
CHEM 4110	Advanced Analytical Chemistry	
CHEM 4221	Practical Applications of Spectroscopy	
CHEM 4310	Advanced Organic Chemistry	
CHEM 4421	Cannabis Chemistry	
CHEM 4510	Computational Chemistry	
CHEM 4600	Advanced Topics in Chemistry [2]	
CHEM 4530	Advanced Physical Chemistry	
CHEM 4640	Artificial Intelligence in Chemistry and Biochemistry	
CHEM 4700	Environmental Chemistry	
CHEM 4815	Structural Biology of Neurodegenerative Diseases	
CHEM 4825	Biochemistry of Metabolic Disease	
CHEM 4820	General Biochemistry II	
CHEM 4835	Biochemistry of Gene Regulation and Cancer	
CHEM 4845	Molecular Modeling and Drug Design	
CHEM 4860	Bioinorganic Chemistry: Bioinorganic compounds in medicine	
CHEM 5010	Advanced Inorganic Chemistry	
CHEM 5830	Graduate Biochemistry II	
Complete ancillary coursework.		*18*
Mathematics (p. 2)		
Physics (p.)		
Total Hours		**72**

[1] Students who choose Physics ***Sequence A*** can substitute MATH 2421 Calculus III or MATH 3511 Mathematics of Chemistry for CHEM 4500 Foundations of Physical Chemistry.

[2] With permission from course instructor and undergraduate major advisor. The course must fulfill either the biochemistry or inorganic chemistry area.

Math

Code	Title	Hours
Complete all of the following:		*8*
MATH 1401	Calculus I	
MATH 2411	Calculus II	

Physics

Code	Title	Hours
Complete one of the following sequences. Refer to note 3 under Program Restrictions, Allowances and Recommendations for alternative Physics lab information:		*10*
Sequence A [3]		
PHYS 2311	General Physics I: Calculus-Based	
PHYS 2321	Intro Experimental Phys Lab I	
PHYS 2331	General Physics II: Calculus-Based	
PHYS 2341	Intro Experimental Phys Lab II	
Sequence B		
PHYS 2010	College Physics I	
PHYS 2321	Intro Experimental Phys Lab I	
PHYS 2020	College Physics II	
PHYS 2341	Intro Experimental Phys Lab II	

[3] Students who choose Physics ***Sequence A*** can substitute MATH 2421 Calculus III or MATH 3511 Mathematics of Chemistry for CHEM 4500 Foundations of Physical Chemistry.

To learn more about the Student Learning Outcomes for this program, please visit our website (https://clas.ucdenver.edu/chemistry/undergraduate-students/bachelor-science/).

To review the Degree Map for this program, please visit our website (https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/clas/).