BIOCHEMISTRY UNDERGRADUATE CERTIFICATE

Introduction

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

Beginning with the Fall 2022 term, the Biochemistry Undergraduate Certificate is available to undergraduate non-degree seeking students. Degree seeking undergraduate students should consider completing the Biochemistry Minor (https://clas.ucdenver.edu/chemistry/students/undergraduate-students/biochemistry-minor/).

Program Delivery

- This is an on-campus program.

Declaring This Certificate

- Students should meet with the Biochemistry Certificate Advisor Dr. Marta Maroń marta.maron@ucdenver.edu to file a certificate plan prior to the semester of graduation.

These program 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 Biochemistry advisor to confirm the best plans of study before finalizing them.

General Requirements

Students must satisfy all requirements as outlined below and by the department offering the certificate.

- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/) for information about Academic Policies

Certificate Requirements

1. Students must complete a minimum of 15 credit hours chosen from the approved courses.
2. Students must complete a minimum of six upper-division (3000-level and above) credit hours chosen from the approved courses below.
3. Students must earn a minimum grade of C (2.0) in all courses that apply to the certificate and must achieve a minimum cumulative certificate GPA of 2.7. All graded attempts in required and elective courses are calculated in the certificate GPA. Courses taken using P +/P/F or S/U grading cannot apply to certificate requirements.
4. Students must complete 15 credit hours from the approved required and elective courses with CU Denver faculty.

Certificate Restrictions, Allowances and Recommendations

1. All courses applied to the Biochemistry Certificate need to be taken within ten years of the graduation date with the exception of General Chemistry I and II Lecture and Lab: CHEM 2031 General Chemistry I, CHEM 2081 Honors General Chemistry I, CHEM 2038 General Chemistry Laboratory I, CHEM 2039 Majors General Chemistry I Laboratory, CHEM 2088 Honors General Chemistry I Laboratory, CHEM 2061 General Chemistry II, CHEM 2091 Honors General Chemistry II Lecture, CHEM 2068 General Chemistry Laboratory II, CHEM 2069 Majors General Chemistry II Laboratory and CHEM 2098 Honors General Chemistry II Laboratory. In the event that the student would like to apply for expired credit for 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.
2. Prerequisite courses do not have to be completed at CU Denver. Required courses including electives must be completed in residency at CU Denver. Any residency exemptions need to be approved in writing by the Biochemistry advisor prior to the course(s) being taken at another institution.

Code	Title	Hours
Students should be aware of and complete appropriate prerequisite courses before beginning the certificate. The following represent common prerequisites-check each individaul course to better understand the specific prerequisites required:		
CHEM 2031	General Chemistry I	
or CHEM 208	Honors General Chemistry I	
CHEM 2038	General Chemistry Laboratory I	
or CHEM 203	Majors General Chemistry I Laboratory	
or CHEM 208	Honors General Chemistry I Laboratory	
CHEM 2061	General Chemistry II	
or CHEM 209	Honors General Chemistry II Lecture	
CHEM 2068	General Chemistry Laboratory II	
or CHEM 206	Majors General Chemistry II Laboratory	
or CHEM 209	Honors General Chemistry II Laboratory	
BIOL 2010	Organisms to Ecosystems (Gen Bio)	
or BIOL 203	Honors Organisms to Ecosystems (Gen Bio)	
BIOL 2011	Organisms to Ecosystems Lab (Gen Bio)	
or BIOL 203	Honors Organisms to Ecosystems Lab (Gen Bio)	
BIOL 2020	Molecules to Cells (Gen Bio)	
or BIOL 204	Honors Molecules to Cells (Gen Bio)	
BIOL 2021	Molecules to Cells Lab (Gen Bio)	
or BIOL 204	Honors Molecules to Cells Lab (Gen Bio)	
CHEM 3411	Organic Chemistry I	
or CHEM 348	Majors Organic Chemistry I	
CHEM 3418	Organic Chemistry Lab I	
or CHEM 348	Majors Organic Chemistry Laboratory I	
CHEM 3421	Organic Chemistry II	
or CHEM 349	Majors Organic Chemistry II	
CHEM 3428	Organic Chemistry Lab II	
or CHEM 349	Majors Organic Chemistry Laboratory II	

Code	Title	Hours
Complete the following required courses:		*6*
BIOL 3611	General Cell Biology	
CHEM 4810	General Biochemistry I	
or CHEM 381	Biochemistry	
or CHEM 581	Graduate Biochemistry I	

Complete one of the following Biochemistry courses:		*3*
CHEM 4411	Bioconjugate techniques and Theranostic Nanomedicine	
CHEM 4815	Structural Biology of Neurodegenerative Diseases	
CHEM 4820	General Biochemistry II	
CHEM 4825	Biochemistry of Metabolic Disease	
CHEM 4835	Biochemistry of Gene Regulation and Cancer	
CHEM 4845	Molecular Modeling and Drug Design	
CHEM 4860	Bioinorganic Chemistry: Bioinorganic compounds in medicine	
CHEM 5830	Graduate Biochemistry II	
Complete a minimum of 6 credits from the following Biochemistry elective courses, not already completed:		*6*
BIOL 3124	Introduction to Molecular Biology	
BIOL 3225	Human Physiology	
BIOL 3763	Biostatistics	
BIOL 3804	Developmental Biology	
BIOL 3832	General Genetics	
BIOL 4024	Introduction to Biotechnology	
BIOL 4064	Cell Biology of Disease	
BIOL 4125	Molecular Biology Laboratory	
BIOL 4144	Medical Microbiology	
BIOL 4165	Neurobiology	
BIOL 4550	Cell Signaling	
CHEM 3011	Inorganic Chemistry	
CHEM 3111	Analytical Chemistry	
CHEM 4121	Instrumental Analysis	
CHEM 4411	Bioconjugate techniques and Theranostic Nanomedicine	
CHEM 4511	Physical Chemistry: Thermodynamics and Kinetics	
CHEM 4521	Physical Chemistry: Quantum and Spectroscopy	
CHEM 4815	Structural Biology of Neurodegenerative Diseases	
CHEM 4820	General Biochemistry II	
CHEM 4825	Biochemistry of Metabolic Disease	
CHEM 4860	Bioinorganic Chemistry: Bioinorganic compounds in medicine	
CHEM 5830	Graduate Biochemistry II	
PHYS 3151 & PHYS 3161	Biophysics Outlook I and Biophysics Outlook II [1]	
PHYS 3452	Biophysics of the Cell NM	
PSYC 3832	Neural Basis of Learning	
Total Hours		**15**

[1] These two one-credit courses together fulfill one elective requirement.

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