

**FOR TRANSFER STUDENTS**

**PROGRAM OVERVIEW**

Biochemistry is the chemistry of life – the molecules, reactions, and energy transformations that underlie structure and function in all living organisms. The study of biochemistry combines knowledge from chemistry, biology, physics, and mathematics (and sometimes other disciplines) to understand how life works at the molecular level. This integrated scientific knowledge will be essential for understanding the future of human health, sustainable energy, and the environment.

The B.S. Biochemistry program at CU Denver strongly emphasizes connections between basic science and human health. Required coursework covers much of the foundational knowledge and skills for graduate and health professions entrance exams. Several courses explore connections between cutting-edge biochemical research and different diseases. Students are encouraged to take advantage of undergraduate research opportunities in biochemistry and related fields either at CU-Denver or on the nearby Anschutz Medical campus. Graduates learn skills in critical thinking, problem solving, and scientific communication for careers in the health and natural sciences. A B.S. in Biochemistry stands out as a premier accomplishment in applications for professional degree programs, including pharmacy, medicine, nursing, dentistry, medical technology, and many others.

**ACADEMIC ADVISING**

The College of Liberal Arts and Sciences (CLAS) supports students to graduation using a shared advising system. CLAS students have two academic advisors with whom they should meet regularly to discuss academic and degree progress: a CLAS Academic Advisor and a major advisor.

*For questions related to CU Denver Core Curriculum, CLAS, general graduation requirements, university/college academic policies, or campus resources contact:*

**CLAS Academic Advising**  
[clas\\_advising@ucdenver.edu](mailto:clas_advising@ucdenver.edu)  
Visit the CLAS Advising website [here](#)  
North Classroom (NC) 1030  
303-315-7100

*For questions related to major requirements, major course prerequisites, or evaluation of transfer coursework in your major contact:*

**Biochemistry Major Advising**  
[CLAS Major Advisor Contact Information](#)  
Visit the department website [here](#)  
Science Building (SI) 3071  
303-315-7650

*For questions about admission requirements, transfer policies, applying, and the transfer process contact:*

**Office of Admissions**  
[admissions@ucdenver.edu](mailto:admissions@ucdenver.edu)  
Visit the Admissions website [here](#)  
Student Commons Building (SCB) 1005  
303-315-2601

**GENERAL GRADUATION REQUIREMENTS & POLICIES**

*All CU Denver CLAS students are required to complete the following minimum general graduation requirements to be eligible to apply for graduation:*

1. Complete a minimum of 120 credit hours
2. Achieve a minimum 2.0 CU cumulative grade point average (GPA)
3. Complete a minimum of 45 upper-division (3000- to 4000-level) credit hours
4. Complete all CU Denver Core, CLAS, and major requirements
5. Complete a minimum of 30 CLAS credit hours with letter grades at CU Denver

*The following are **maximum** credit hours that can apply toward the minimum 120 credit hours required for graduation:*

- 16 credit hours Pass/Fail
- 12 credit hours of Independent Study/Directed Research
- 12 credit hours of internship credit
- 8 credit hours of physical education credit

**PROGRAM REQUIREMENTS & POLICIES**

**The following program requirements are based on degree requirements for the current Catalog year at CU Denver and are subject to change. Students are responsible for completing degree requirements based on the Catalog year for which they are admitted.**

**Students are responsible for meeting with the major advisor to confirm major requirements.** Students completing the Biochemistry B.S. Degree are required to complete the following minimum program requirements:

1. Students must complete a minimum of 74 credit hours, including a minimum of 33 CHEM credit hours.
2. Students must complete a minimum of 16 upper-division (3000-level and above) CHEM credit hours.
3. Students must earn a minimum grade of C- (1.7) 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 credits hours with CU Denver faculty including CHEM 4518 Physical Chemistry Laboratory: Reaction Analysis or CHEM 4538 Physical Chemistry Laboratory: Molecular Structure or CHEM 4548 Physical Biochemistry Laboratory.
5. A student who has declared a Biochemistry 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 Biochemistry advisor. No more than 3 additional credit hours of such pre-approved transfer credits will be allowed.
6. All courses applied to the biochemistry 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 2088 Honors General Chemistry 1 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 Laboratory II 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.
7. Intro Experimental Physics labs I & II (PHYS 2321 & PHYS 2341) are specifically designed for students in non-Physics majors and can be paired with either College Physics (PHYS 2010 & PHYS 2020) or General Physics (PHYS 2311 & PHYS 2331) lectures. Students pursuing a second major in Physics should complete General Physics lectures (PHYS 2311 & PHYS 2331) and Applied Physics Labs (PHYS 2351 & PHYS 2361).
8. Students may double major in Biochemistry and Chemistry and may apply the requirements for both majors if 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.

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**COURSEWORK THAT CAN BE COMPLETED AT PREVIOUS INSTITUTION**

The following is a “bucket” of requirements students can complete prior to transferring to CU Denver, including equivalent Colorado Community College System (CCCS) courses. To determine the equivalencies of courses to be completed at non-CU Denver institutions, students can visit [www.transferology.com](http://www.transferology.com). **It is critical students connect with a CU Denver academic advisor to ensure planned courses will transfer *and* apply to CU Denver degree requirements.** All non-CU Denver coursework must be completed with a C- or better to be eligible for transfer.

Students interested in completing an Associate (A.A. or A.S.) Degree or a [Colorado Statewide Transfer Articulation Agreement or Degree with Designation \(DWD\)](#) must work with their community/junior college academic advisor to create an academic plan that accounts for all degree or transfer articulation agreement requirements. Colorado Community College Students may also explore the option to complete [Reverse Transfer](#) at CU Denver.

Requirements	CU Denver Credits	CCCS Equivalent Courses & Notes	CCCS Credits
<b>CU Denver Core Curriculum Requirements</b>	<b>34 - 40</b>		
ENGL 1020 – Core Composition I	3	ENG 1021	
ENGL 2030 – Core Composition II	3	ENG 1022	
Mathematics	3 - 4	MAT 2410 <i>recommended</i> or GT-MA1	
Arts	3	GT-AH	
Humanities	3	GT-AH or GT-HI	
Behavioral Sciences	3 - 4	GT-SS	
Social Sciences	3 - 4	GT-SS or GT-HI*	
Natural/Physical Science with lab	4 - 5	CHE 1111 or GT-SC1	
Natural/Physical Science without lab or Math	3 - 5	CHE 1112 or GT-SC2 or GT-MA1 ( <i>except the course used for Core Math</i> ) or GT-SC1	
International Perspectives	3	Additional GT-AH, HI, SS* ( <i>see note below</i> )	
Cultural Diversity	3	<i>To be completed at CU Denver. This requirement must be completed with an upper-division course and CCCS courses will not apply.</i>	---
<b>CLAS Graduation Requirements</b>	<b>15 - 29</b>		
CLAS Communicative Skills	3	COM 1150 or PHI 1013	
CLAS Second Language	0 - 10	(e.g.) SPA 1012 or ASL 1122 <b><i>Students have several options to fulfill this requirement. Please consult a CU Denver CLAS Academic Advisor.</i></b>	
CLAS Humanities	3	Any transferrable LIT, HIS, HUM, or PHI course	
CLAS Behavioral Sciences	3 - 4	Any transferrable ANT, COM, or PSY course ( <i>except GT-SC courses</i> )	
CLAS Social Sciences	3 - 4	Any transferrable ECO, ETH, GEO, PSC, or SOC course ( <i>except GT-SC courses</i> )	
CLAS Natural/Physical Science with lab	3 - 5	CHE 2111 or GT-SC1 <b><i>If you completed only one science course with a lab for the CU Denver Core Curriculum, this course must have an associated lab.</i></b>	
<b>BICM Major Courses</b>	<b>45</b>		
CHEM 2031 & 2038 General Chemistry I with Lab	4	CHE 1111 <i>Course can fulfill CU Denver Core Natural/Physical Science with lab</i>	
CHEM 2061 & 2068 General Chemistry II with Lab	5	CHE 1112 <i>Course can fulfill CU Denver Core Natural/Physical Science with lab</i>	
BIOL 2010 & 2011 Organisms to Ecosystems (Gen Bio) with lab	4	BIO 1111 <i>Course can fulfill CU Denver Core Natural/Physical Science with lab</i>	
BIOL 2020 & 2021 Molecules to Cells (Gen Bio) with lab	4	BIO 1112 <i>Course can fulfill CU Denver Core Natural/Physical Science with lab</i>	
CHEM 3411 & 3418 Organic Chemistry I with lab	5	CHE 2111 <i>To apply as CHEM 3481 &amp; 3488 if completed prior to transfer-See CU Denver CHEM Advisor</i> <b>*Note: CCCS courses are counted as lower-division credits at CU Denver</b>	
CHEM 3421 & 3428 Organic Chemistry II with lab	5	CHE 2112 <i>To apply as CHEM 3491 if completed prior to transfer-See CU Denver CHEM Advisor</i> <b>*Note: CCCS courses are counted as lower-division credits at CU Denver</b>	
PHYS 2311 & 2321 General Physics I with Lab <i>and</i> PHYS 2331 & 2341 General Physics II with Lab <i>or</i> PHYS 2010 & 2321 College Physics I with Lab <i>and</i> PHYS 2020 & 2341 College Physics II with Lab	10	PHY 2111 <i>and</i> PHY 2112 ( <i>for General Physics</i> ) <i>or</i> PHY 1111 <i>and</i> PHY 1112 ( <i>for College Physics</i> ) <i>Courses can fulfill CU Denver Core Natural/Physical Science with lab</i>	
MATH 1401 Calculus I	4	MAT 2410 ( <i>Course can fulfill CU Denver Core Mathematics</i> )	
MATH 2411 Calculus II	4	MAT 2420 ( <i>Course can fulfill CU Denver Core Mathematics</i> )	
<b>Minimum Applicable Transfer Credit Hours Recommended:</b>	<b>60</b>	<i>Students completing less than 60 applicable transfer credit hours will have additional credit hours to complete at CU Denver. Students needing general elective credits should consult a CU Denver CLAS Academic Advisor.</i>	

**\*The applicability of Guaranteed Transfer (GT Pathways) courses to specific CU Denver Core Curriculum requirements requires completion of a block of five courses: two GT-AH courses; one GT-HI course; one GT-SS course; and one additional GT-AH, GT-HI, or GT-SS course.**

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**SAMPLE PLAN – COURSEWORK TO BE COMPLETED AT CU DENVER**

Based on successful completion of 60 applicable transfer credit hours and the complete “bucket” of requirements outlined above, students would have the following remaining to complete at CU Denver. At CU Denver, students must tailor this plan based on the evaluation of previously completed college coursework (e.g., AP, IB, CLEP, dual/concurrent enrollment, and transfer credit), course availability, individual preferences related to course load, summer term courses, part-time or full-time student status, or add-on programs such as minors or double-majors.

**Note: this plan assumes students have completed the CLAS Second Language proficiency requirement.** Students must demonstrate second language proficiency through a 2<sup>nd</sup> semester college-level course equivalent (e.g., SPA 1012 or ASL 1122) with a C- or higher, satisfactory proficiency testing (CU Denver Department of Modern Languages Placement Testing, BYU FLATS, CLEP), or submitting their high school transcript demonstrating completion of a 2<sup>nd</sup> year (Level II) high school course with a minimum grade of “C-” (1.7) in the 2<sup>nd</sup> semester of the 2<sup>nd</sup> year or later. Students may have additional options to fulfill this requirement and should consult a CU Denver CLAS Academic Advisor. **Students who have not fulfilled this requirement must work with a CU Denver CLAS Academic Advisor to modify this plan.**

Year Three	Fall	CRS	Spring	CRS
	CHEM 3498 <sup>PE</sup>	2	CHEM 4500 <sup>PE</sup>	3
	CHEM 4810 <sup>PE</sup> or 5810 <sup>PE</sup>	3	CHEM 4828 <sup>PE</sup>	2
	Molecular Science Elective <sup>PE</sup>	3	Advanced Biochemistry Elective <sup>PE</sup>	3
	CU Denver Core Cultural Diversity	3	General Upper-Division Elective	3
	General Upper-Division Elective	3	General Elective (if needed)	3
	<b>Total Credit Hours</b>	<b>14</b>	<b>Total Credit Hours</b>	<b>14</b>

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended

Biochemistry students have multiple sequencing options for year four depending on the semester in which they complete specific major courses. Students must work with the BICM advisor to discuss and plan for one of the following year four options:

**Option 1:**

Year Four	Fall	CRS	Spring	CRS
	Molecular Science Elective <sup>PE</sup>	3	CHEM 4511 <sup>PE</sup>	3
	Advanced Biochemistry Elective <sup>PE</sup>	3	CHEM 4548 <sup>PE</sup>	2
	General Upper-Division Elective	3	Advanced Biochemistry Elective <sup>PE</sup>	3
	General Upper-Division Elective	3	General Elective	3
			General Elective (if needed)	3
<b>Total Credit Hours</b>	<b>12</b>	<b>Total Credit Hours</b>	<b>14</b>	

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended

**Option 2:**

Year Four	Fall	CRS	Spring	CRS
	CHEM 4521 <sup>PE</sup>	3	Advanced Biochemistry Elective <sup>PE</sup>	3
	CHEM 4538 <sup>PE</sup>	2	Advanced Biochemistry Elective <sup>PE</sup>	3
	Molecular Science Elective <sup>PE</sup>	3	General Upper-Division Elective	3
	General Elective	3	General Upper-Division Elective	3
	General Elective (if needed)	3		
	<b>Total Credit Hours</b>	<b>14</b>	<b>Total Credit Hours</b>	<b>12</b>

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended