College of Engineering, Design and Computing
UNIVERSITY OF COLORADO **DENVER**

BIOENGINERING

Bachelor of Science (B.S.) – Catalog Year 2024-2025

FOR TRANSFER STUDENTS

PROGRAM OVERVIEW

Bioengineering is a highly interdisciplinary field that combines the mathematical and physical sciences with engineering principles to study biology, physiology, medicine, behavior and health. Bioengineering is emerging as the leading discipline at the interface of clinical sciences, basic research, and engineering and maintains focus on catalyzing technology to cure and prevent disease. The undergraduate bioengineering program provides training at both the Denver campus and the Anschutz Medical Campus.

The BS Bioengineering program emphasizes the professional competencies of leadership, communication, presentation and critical problem solving. These learning goals and the dual-campus model provide robust training for a variety of careers in the fast-growing biomedical and biotechnology industry. Graduates will also have an excellent foundation for continued education in science, engineering and medicine.

ACADEMIC ADVISING

Students admitted to the College of Engineering, Design and Computing (CEDC) who have declared a major should meet with an advisor in their specific department and should contact that department to schedule an appointment. For Bioengineering academic advising, please contact the Bioengineering Undergraduate Program Manager:

Shaun Boulier
shaun.boulier@ucdenver.edu

Students admitted to the College of Engineering, Design and Computing as pre-engineers or who are undecided should meet with a college academic advisor.

Bioengineering
bioengineering@ucdenver.edu
Visit the Bioengineering website here

GENERAL GRADUATION REQUIREMENTS & POLICIES

All College of Engineering, Design and Computing (CEDC) students are required to complete the following minimum general graduation requirements:

1. Complete a minimum of 128 semester hours
2. Achieve a minimum 2.0 grade point average (GPA) for all courses attempted, for all required courses and for all courses taken within the student's major department
3. Complete all CU Denver Core, CEDC, and major requirements
4. Complete a minimum of 30 CEDC hours as a declared CEDC student in good standing at CU Denver
5. Complete at least the final two semesters as an enrolled CEDC student

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 Undergraduate Program Manager in Bioengineering to confirm major requirements. Students completing the Bioengineering B.S. Degree are required to complete the following minimum program requirements:

1. Complete 24 semester hours of CU Denver Core Curriculum coursework.
2. Complete a minimum of 58 semester hours of math, chemistry, Biology, Physics, and lower-division bioengineering coursework with a grade of C – or better and a 2.0 GPA or higher.
3. Complete a minimum of 45 semester hours of upper-division bioengineering coursework, including 12 semester hours of approved technical electives with a grade of C- or higher in each course. All upper-division bioengineering courses are taught at the Anschutz Medical Campus (AMC). Of the twelve technical elective hours, a minimum of 9 credit hours must be taught within the Department of Bioengineering.

COURESWORK 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. **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

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transfer articulation agreement requirements. Colorado Community College Students may also explore the option to complete Reverse Transfer at CU Denver.

CU Denver Requirements	CU Denver Credits	CCCS Equivalent Courses & Notes	CCCS Credits
CU Denver Core Curriculum Requirements	**24**		
ENGL 1020 – Core Composition I	3	GT-CO1 (ENG 1021)	3
ENGL 2030 – Core Composition II	3	GT-CO2 (ENG 1022)	3
Arts	3	GT-AH	3
Humanities	3	GT-AH or GT-HI	3
Behavioral Sciences	3	GT-SS	3
Social Sciences	3	GT-SS or GT-HI*	3
International Perspectives	3	Additional GT-AH, HI, SS* *(see note below)*	3
Cultural Diversity	3	*To be completed at CU Denver. This requirement must be completed with an upper-division course and CCCS courses will not apply.*	
Required Mathematics and Basic Sciences Courses	**48**		
MATH 1401 Calculus I	4	GT-MA1 (MAT 2410)	5
MATH 2411 Calculus II	4	GT-MA1 (MAT 2420)	5
MATH 2421 Calculus III	4	GT-MA1 (MAT 2430)	4
MATH 3195 Linear Algebra and Differential Equations	4	GT-MA1 (MAT 2562 or MAT 2540 & MAT 2562)	4
BIOL 2020 and 2021 Molecules to Cells with Lab	4	GT-SC1 (BIO 1111)	5
BIOL 2010 & 2011- Organisms to Ecosystems with Lab	4	GT-SC1 (BIO 1112)	5
CHEM 2031 & 2038 General Chemistry I with lab	4	GT-SC1 (CHE 1111)	5
CHEM 2061 & 2068 General Chemistry I with lab	5	GT-SC1 (CHE 1112)	5
CHEM 3411 & 3418 Organic Chemistry I with lab	5	GT-SC1 (CHE 2111)	5
PHYS 2311 & 2321 General Physics I with lab	5	GT-SC1 (PHY 2111)	5
PHYS 2331 & 2341 General Physics II with lab	5	GT-SC1 (PHY 2112)	5
Required BIOE Courses Downtown	**11**		
BIOE 1010 Bioengineering Design and Prototyping I	3		
ENGR 1200- Fundamentals of Engineering Design Innovation	3		
ENGR 1100- Fundamentals of Computational Innovation	3		
BIOE 2020 Introduction to Computational Methods for Bioengineers	2		
Required BIOE Courses (Anschutz)	45		
BIOE 3010 Bioinstrumentation	3		
BIOE 3020 Introduction to Biomechanical Analysis	3		
BIOE 3030 Introduction to Biomaterials	3		
BIOE 3040 Physiology for Bioengineering	3		
BIOE 3050 Systems Biology	3		
BIOE 3060 Biostatistics, Measurement, and Analysis	3		
BIOE 3070 Bioengineering Lab I	3		
BIOE 3071 Bioengineering Lab II	3		
BIOE 3090 Introduction to BioDesign	3		
BIOE 4035 Undergraduate BioDesign II	3		

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BIOE 4045 BioDesign III	3		
BIOE Technical Electives	**12**		
Total Program Hours:	**128**		

***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 course; one GT-HI course; one GT-SS course; and one additional GT-AH, GT-HI, or GT-SS course.**

SAMPLE PLAN – COURSEWORK TO BE COMPLETED AT CU DENVER

Based on successful completion of applicable transfer credits 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.

Students deviating from this plan must fulfill course prerequisites and must meet with the faculty advisor in their department to confirm degree requirements. Students intending to transfer to CU Denver to pursue a Bioengineering B.S. degree should note the following:

1. The College of Engineering, Design and Computing has a competitive admissions process. Student may be admitted to CU Denver but not the College of Engineering, Design and Computing. Such students may work with CU Denver's Academic Success and Advising Center to identify an alternative major and/or program of study.
2. Colorado Community College students should transfer to CU Denver once they have met the College of Engineering, Design and Computing's admission requirements. They should not necessarily complete an associate's degree.

Year Three

Fall (Downtown)	CRS
BIOE1010 - Bioengineering Design and Prototyping I	3
ENGR 1100- Fundamentals of Computational Innovation	3
CHEM 3411/3418 – Organic Chemistry/Lab I	5
International Perspectives	3
TOTAL	14

Spring (Downtown)	CRS
ENGR 1200- Fundamentals of Engineering Design Innovation	3
BIOE2020 - Intro to Comp Methods for Bioengineers	2
PSCY 1000 - Introduction to Psychology I (recommended)	3
SOCY 1001 – Introduction to Sociology (recommended	3
Cultural Diversity	3
TOTAL	14

Year Four

Fall (Anschutz Medical Campus)	CRS
BIOE3010 - Bioinstrumentation	3
BIOE3020 - Introduction to Biomechanical Analysis	3
BIOE3030 - Introduction to Biomaterials	3
BIOE3040 - Physiology for Bioengineering	3
TOTAL	12

Spring (Anschutz Medical Campus)	CRS
BIOE3050 - Cell & Molecular Bioengineering	3
BIOE3060 - Biostatistics, Measurement, and Analysis	3
BIOE3090 - Introduction to BioDesign	3
BIOE Technical Elective	3
TOTAL	12

Year Five

Fall (Anschutz Medical Campus)	CRS
BIOE4035 - Undergraduate BioDesign II	3
BIOE Technical Elective	3
BIOE Technical Elective	3
BIOE3070 - Bioengineering Lab I	3
TOTAL	12

Spring (Anschutz Medical Campus)	CRS
BIO4045 - BioDesign III	3
BIOE3071 - Bioengineering Lab II	3
BIOE Technical Elective	3
TOTAL	9