

BIOMEDICAL ENGINEERING - BACHELOR OF SCIENCE (BSBM)

Biomedical engineering is an exciting, multidisciplinary field that lies at the interface of medicine, biology and engineering. Biomedical engineers use engineering principles to analyze and solve problems in biology and medicine, providing an overall enhancement to healthcare. Biomedical engineers create technology to save lives and improve the quality of life. Much of the equipment in hospitals and clinics across the globe was designed, built and tested by biomedical engineers. At the same time, biomedical engineers employ concepts learned from biology and medicine to generate new (biomimetic) engineering designs in fields such as robotics and artificial intelligence.

Western Colorado University/University of Colorado Boulder Engineering Partnership Program

Western Colorado University (Western) (<https://western.edu/school/paul-m-rady-school-of-computer-science-engineering/>) and CU Boulder have created a partnership to deliver specific engineering baccalaureate programs in **their entirety in Gunnison, Colorado**. The first two years of coursework are taught by Western faculty and the second two years of coursework are taught by CU Boulder faculty located in Gunnison. Students completing the programs will be awarded a Bachelor of Science from CU Boulder.

Degrees are offered in biomedical engineering and mechanical engineering. Additional details can be found on the CU Boulder/Western Engineering Partnership Program website. (<https://western.edu/school/paul-m-rady-school-of-computer-science-engineering/>)

Requirements

Prerequisites and Passing Grades

The minimum passing grade for a course that is a prerequisite or corequisite for another required course is C-. If a grade of D+ or lower is received in a course that is a prerequisite to another, the student may not register for the subsequent course and must repeat the prerequisite course until a grade of C- or higher is achieved.

The minimum passing grade for a course that is not specifically a prerequisite or corequisite for another required course is D-.

The biomedical engineering program reserves the right to drop students enrolled in BMEN courses who have not met the minimum prerequisite requirements. It is the student's responsibility to communicate with the program if summer coursework and/or transfer credit will be used to meet the prerequisite requirement.

Required Courses and Credits

Required courses in engineering, physical science, and mathematics are interwoven throughout the curriculum to provide a balanced education in the fundamentals of the biomedical engineering profession. The core courses are complemented by technical electives, humanities and social sciences electives (<https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/>), free electives, and a writing course ([https://www.colorado.edu/engineering-advising/get-your-degree/degree-](https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)

requirements/humanities-social-sciences-and-writing-requirements/), for a total of 128 credits required for the degree.

| Code | Title | Credit Hours |
|-------------------------------------|--|--------------|
| Required Biomedical Courses | | |
| BMEN 1000 | Exploring Biomedical Engineering | 1 |
| or AREN 1316 | Introduction to Architectural Engineering | |
| or ASEN 1009 | Undergraduate Aerospace Seminar | |
| or CHEN 1300 | Introduction to Chemical and Biological Engineering | |
| or CSCI 1000 | Computer Science as a Field of Work and Study | |
| or CVEN 1317 | Introduction to Civil and Environmental Engineering | |
| or ECEN 1100 | Exploring ECE | |
| or EVEN 1000 | Introduction to Environmental Engineering | |
| or MCEN 2000 | Mechanical Engineering as a Profession | |
| BMEN 1025 | Computer-Aided Design & Fabrication | 4 |
| or MCEN 1025 | Computer-Aided Design and Fabrication | |
| or GEEN 1017 & BMEN 1035 | Engineering Drawing and Introduction to Fabrication for Biomedical Engineering | |
| BMEN 2100 | Biomedical Engineering Principles and Methods | 3 |
| BMEN 2010 | Biomaterials | 3 |
| BMEN 3010 | Biotransport | 3 |
| BMEN 3030 | Bioinstrumentation | 4 |
| BMEN 4010 | Biomedical Engineering Capstone Design I | 3 |
| BMEN 4020 | Biomedical Engineering Capstone Design II | 3 |
| BMEN 4117 | Anatomy and Physiology for Biomedical Engineering | 3 |
| or MCEN 4117 | Anatomy and Physiology for Engineers | |
| or MCEN 5117 | Anatomy and Physiology for Engineers | |
| or BMEN 5117 | Anatomy and Physiology for Biomedical Engineering | |
| Required Mechanics Courses | | |
| MCEN 2023 | Statics and Structures | 3 |
| or GEEN 2851 | Statics for Engineers | |
| or CVEN 2121 | Analytical Mechanics 1 | |
| Required Electrical Courses | | |
| ECEN 2250 | Introduction to Circuits and Electronics | 3 |
| ECEN 3301 | Biomedical Signals and Systems | 3 |
| Technical Electives | | |
| | Choose 24 credit hours of technical elective coursework. At least 18 of 24 must be 3000 level or above, and at least 15 must be Engineering Technical Electives, including 6 credits from BME approved focused electives. ¹ | 24 |
| Required Mathematics Courses | | |
| APPM 1350 | Calculus 1 for Engineers | 4 |
| or MATH 1300 | Calculus 1 | |
| or APPM 1345 | Calculus 1 with Algebra, Part B | |
| APPM 1360 | Calculus 2 for Engineers | 4 |
| or MATH 2300 | Calculus 2 | |

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|--|--|----|
| APPM 2350 or MATH 2400 | Calculus 3 for Engineers Calculus 3 | 4 |
| APPM 2360 or MATH 2130 & MATH 3430 or MATH 2135 & MATH 3430 | Introduction to Differential Equations with Linear Algebra Introduction to Linear Algebra for Non- Mathematics Majors and Ordinary Differential Equations Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations | 4 |
| Required Physics Course | | |
| PHYS 1110 or PHYS 1115 | General Physics 1 General Physics 1 for Majors | 4 |
| PHYS 1120 or PHYS 1125 | General Physics 2 General Physics 2 for Majors | 4 |
| PHYS 1140 | Experimental Physics 1 | 1 |
| Required Chemistry Courses | | |
| <i>Select one of the following chemistry sequence options:</i> | | 7 |
| <i>Option 1:</i> | | |
| CHEN 1201 or CHEN 1211 or CHEN 1113 or CHEN 1400 | General Chemistry for Engineers 1 ³ Accelerated Chemistry for Engineers General Chemistry 1 Foundations of Chemistry | |
| CHEN 1203 or CHEN 1211 or CHEN 1133 or CHEN 2100 | General Chemistry for Engineers 2 ³ Accelerated Chemistry for Engineers General Chemistry 2 Foundations of Chemistry 2 | |
| CHEN 1221 or CHEN 1134 or CHEN 1114 or CHEN 2101 | Engineering General Chemistry Lab Laboratory in General Chemistry 2 Laboratory in General Chemistry 1 Laboratory in Foundations of Chemistry 2 | |
| <i>Option 2: (Students who take Option 2 must take two extra Free Electives)</i> | | |
| CHEN 1211 | Accelerated Chemistry for Engineers | |
| CHEN 1221 or CHEN 1134 or CHEN 1114 or CHEN 1401 | Engineering General Chemistry Lab Laboratory in General Chemistry 2 Laboratory in General Chemistry 1 Foundations of Chemistry Lab | |
| Required Biology Course | | |
| BIEN 2810 or MCDB 1150 or EBIO 1210 & EBIO 1220 | Biology for Engineers Introduction to Cellular and Molecular Biology General Biology 1 and General Biology 2 | 3 |
| Required Computing and Data Analysis Courses | | |
| CHEN 1310 or CSCI 1300 | Introduction to Engineering Computing ⁴ Computer Science 1: Starting Computing | 3 |
| CHEN 3010 or STAT 4000 | Applied Data Analysis ⁴ Statistical Methods and Application I | 3 |
| Humanities, Social Sciences and Writing | | |
| Complete the college's humanities, social sciences and writing requirement as specified ² | | 18 |
| Free Electives | | |

| | |
|---|---|
| Choose at least 9 credit hours of free electives to meet the minimum 128 credit hours required for the bachelor's degree. | 9 |
|---|---|

| | |
|---------------------------|------------|
| Total Credit Hours | 128 |
|---------------------------|------------|

- Choose from the course options listed on the program's Advising & Curriculum webpage.
- For more information, see the College of Engineering & Applied Science (<https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/>) website.
- For CHEN 1201–CHEM 1113 and CHEM 1400 substitutions and for CHEN 1203–CHEM 1133 substitution are restricted to transfer students only.
- For CHEN 1310–CSCI 1300 and for CHEN 3010–STAT 4000 substitutions are restricted to CS minors only.

Optional Program Track

The BME Program offers a Pre-medical track option (https://www.colorado.edu/bme/academics/bachelors-program/advising-curriculum/#pre_med_bioinstrumentation_track_sample_curriculum-287) for students preparing for medical school and who are interested in learning about medical devices, biomechanics, therapeutics, imaging and diagnostics.

Premedical Track

For more information, including curriculum requirements, visit the program's Advising & Curriculum (<https://www.colorado.edu/bme/academics/bachelors-program/advising-curriculum/>) webpage.

| Code | Title | Credit Hours |
|---|---|--------------|
| Required Biomedical Courses | | |
| BMEN 1000 or AREN 1316 or ASEN 1009 or CHEN 1300 or CSCI 1000 or CVEN 1317 or ECEN 1100 or EVEN 1000 or MCEN 2000 | Exploring Biomedical Engineering Introduction to Architectural Engineering Undergraduate Aerospace Seminar Introduction to Chemical and Biological Engineering Computer Science as a Field of Work and Study Introduction to Civil and Environmental Engineering Exploring ECE Introduction to Environmental Engineering Mechanical Engineering as a Profession | 1 |
| BMEN 1025 or MCEN 1025 or GEEN 1017 & BMEN 1035 | Computer-Aided Design & Fabrication Computer-Aided Design and Fabrication Engineering Drawing and Introduction to Fabrication for Biomedical Engineering | 4 |
| BMEN 2100 | Biomedical Engineering Principles and Methods | 3 |
| BMEN 2010 | Biomaterials | 3 |
| BMEN 3010 | Biotransport | 3 |
| BMEN 3030 | Bioinstrumentation | 4 |
| BMEN 4117 | Anatomy and Physiology for Biomedical Engineering | 3 |
| BMEN 4010 | Biomedical Engineering Capstone Design I | 3 |

| | | |
|-----------|---|---|
| BMEN 4020 | Biomedical Engineering Capstone Design II | 3 |
|-----------|---|---|

Required Electrical Courses

| | | |
|-----------|--|---|
| ECEN 2250 | Introduction to Circuits and Electronics | 3 |
| ECEN 3301 | Biomedical Signals and Systems | 3 |

Required Mechanical Course

| | | |
|--------------|------------------------|---|
| MCEN 2023 | Statics and Structures | 3 |
| or GEEN 2851 | Statics for Engineers | |
| or CVEN 2121 | Analytical Mechanics 1 | |

Technical Electives

| | |
|---|---|
| Choose 9 credit hours of 3000 level or above of Engineering Technical Electives, including 3 credit hours from the BME focused electives list. ¹ | 9 |
|---|---|

Required Mathematics Courses

| | | |
|--------------------------|---|---|
| APPM 1350 | Calculus 1 for Engineers | 4 |
| or MATH 1300 | Calculus 1 | |
| or APPM 1345 | Calculus 1 with Algebra, Part B | |
| APPM 1360 | Calculus 2 for Engineers | 4 |
| or MATH 2300 | Calculus 2 | |
| APPM 2350 | Calculus 3 for Engineers | 4 |
| or MATH 2400 | Calculus 3 | |
| APPM 2360 | Introduction to Differential Equations with Linear Algebra | 4 |
| or MATH 2130 & MATH 3430 | Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations | |
| or MATH 2135 & MATH 3430 | Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations | |

Required Physics Courses

| | | |
|--------------|------------------------------|---|
| PHYS 1110 | General Physics 1 | 4 |
| or PHYS 1115 | General Physics 1 for Majors | |
| PHYS 1120 | General Physics 2 | 4 |
| or PHYS 1125 | General Physics 2 for Majors | |
| PHYS 1140 | Experimental Physics 1 | 1 |

Required Chemistry Courses

| | | |
|--------------|--|---|
| CHEN 1201 | General Chemistry for Engineers 1 ³ | 4 |
| or CHEN 1211 | Accelerated Chemistry for Engineers | |
| or CHEM 1113 | General Chemistry 1 | |
| or CHEM 1400 | Foundations of Chemistry | |
| CHEM 1114 | Laboratory in General Chemistry 1 | 1 |
| or CHEM 1221 | Engineering General Chemistry Lab | |
| or CHEM 1401 | Foundations of Chemistry Lab | |
| CHEM 1133 | General Chemistry 2 | 4 |
| or CHEM 2100 | Foundations of Chemistry 2 | |
| CHEM 1134 | Laboratory in General Chemistry 2 | 1 |
| or CHEM 2101 | Laboratory in Foundations of Chemistry 2 | |
| CHEM 3311 | Organic Chemistry 1 | 4 |
| CHEM 3321 | Laboratory in Organic Chemistry 1 | 1 |
| CHEM 3331 | Organic Chemistry 2 | 4 |
| CHEM 3341 | Laboratory in Organic Chemistry 2 | 1 |

Required Biochemistry Course

| | | |
|-----------|----------------------------|---|
| BCHM 4611 | Principles of Biochemistry | 3 |
|-----------|----------------------------|---|

Required Biology Courses

| | | |
|--------------------------|--|---|
| MCDB 1150 | Introduction to Cellular and Molecular Biology | 3 |
| or BIEN 2810 | Biology for Engineers | |
| or EBIO 1210 & EBIO 1220 | General Biology 1 and General Biology 2 | |
| MCDB 1161 | From Dirt to DNA: Phage Genomics Laboratory I | 2 |
| or MCDB 1171 | Antibiotics Discovery Through Hands-on Screens I | |
| or MCDB 1181 | Biological Probiotic/Drug Discovery Through Hands-on Screens | |
| or MCDB 2171 | Chemotherapeutic Discovery Through Hands-On Screens 2 | |
| MCDB 2150 | Principles of Genetics | 3 |

Required Computing and Data Analysis Courses

| | | |
|--------------|--|---|
| CHEN 1310 | Introduction to Engineering Computing ⁴ | 3 |
| or CSCI 1300 | Computer Science 1: Starting Computing | |
| CHEN 3010 | Applied Data Analysis ⁴ | 3 |
| or STAT 4000 | Statistical Methods and Application I | |

Humanities, Social Sciences and Writing

| | |
|--|----|
| Complete the college's humanities, social sciences and writing requirement as specified ² | 18 |
|--|----|

Free Electives

| | |
|---|---|
| Choose at least 3 credit hours of free electives to meet the minimum 128 credit hours required for the bachelor's degree. | 3 |
|---|---|

Total Credit Hours 128

¹ Choose from the course options listed on the program's Advising & Curriculum webpage.

² For more information, see the College of Engineering & Applied Science website.

³ For CHEN 1201–CHEM 1113 and CHEM 1400 substitutions are restricted to transfer students only.

⁴ For CHEN 1310–CSCI 1300 and for CHEN 3010–STAT 4000 substitutions are restricted to CS minors only.

Plan(s) of Study

Year One

| Fall Semester | | Credit Hours |
|---------------------|-------------------------------------|--------------|
| APPM 1350 | Calculus 1 for Engineers | 4 |
| CHEN 1201 | General Chemistry for Engineers 1 | 4 |
| BIEN 2810 | Biology for Engineers | 3 |
| BMEN 1025 | Computer-Aided Design & Fabrication | 4 |
| COEN 1500 | CEAS First Year Seminar | 1 |
| Credit Hours | | 16 |

Spring Semester

| | | |
|-------------------------------|-----------------------------------|-----------|
| BMEN 1000 | Exploring Biomedical Engineering | 1 |
| APPM 1360 | Calculus 2 for Engineers | 4 |
| CHEN 1203 | General Chemistry for Engineers 2 | 2 |
| CHEM 1221 | Engineering General Chemistry Lab | 1 |
| PHYS 1110 | General Physics 1 | 4 |
| Humanities or Social Sciences | | 2 |
| Credit Hours | | 14 |

Year Two**Fall Semester**

| | | |
|--|---|-----------|
| BMEN 2100 | Biomedical Engineering Principles and Methods | 3 |
| APPM 2350 | Calculus 3 for Engineers | 4 |
| PHYS 1120 | General Physics 2 | 4 |
| Humanities or Social Science Elective ¹ | | 6 |
| Credit Hours | | 17 |

Spring Semester

| | | |
|---------------------|--|-----------|
| BMEN 2010 | Biomaterials | 3 |
| APPM 2360 | Introduction to Differential Equations with Linear Algebra | 4 |
| MCEN 2023 | Statics and Structures | 3 |
| PHYS 1140 | Experimental Physics 1 | 1 |
| CHEN 1310 | Introduction to Engineering Computing | 3 |
| Free Elective | | 3 |
| Credit Hours | | 17 |

Year Three**Fall Semester**

| | | |
|-------------------------------|---|-----------|
| BMEN 3010 | Biotransport | 3 |
| BMEN 4117 | Anatomy and Physiology for Biomedical Engineering | 3 |
| CHEN 3010 | Applied Data Analysis | 3 |
| ECEN 2250 | Introduction to Circuits and Electronics | 3 |
| Humanities or Social Sciences | | 3 |
| Credit Hours | | 15 |

Spring Semester

| | | |
|---------------------------------|--------------------------------|-----------|
| BMEN 3030 | Bioinstrumentation | 4 |
| ECEN 3301 | Biomedical Signals and Systems | 3 |
| Writing Requirement | | 3 |
| Technical Elective ³ | | 6 |
| Credit Hours | | 16 |

Year Four**Fall Semester**

| | | |
|---------------------------------|--|-----------|
| BMEN 4010 | Biomedical Engineering Capstone Design I | 3 |
| Technical Elective ³ | | 9 |
| Free Elective | | 3 |
| Focus Technical Elective | | 3 |
| Credit Hours | | 18 |

Spring Semester

| | | |
|---|---|-----------|
| BMEN 4020 | Biomedical Engineering Capstone Design II | 3 |
| Focus Technical Elective ³ | | 3 |
| Technical Elective ³ | | 3 |
| Humanities or Social Sciences Elective ¹ | | 3 |
| Free Elective | | 3 |
| Credit Hours | | 15 |

Total Credit Hours 128

¹ Students may choose courses from the list of college-approved humanities and social sciences (HSS) electives. (<http://www.colorado.edu/engineering/academics/policies/hss/>)

² Students may choose a course from the list of college-approved writing courses (<http://www.colorado.edu/engineering/academics/policies/hss/>). (<https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/>)

³ Standard curriculum requires a total of 24 credit hours of technical elective coursework. At least 18 of 24 must be 3000 level or above, and at 15 must be Engineering Technical Electives with 6 credits from the approved BME focus technical elective list. Visit the program's Advising & Curriculum webpage for options.

Premedical Track**Year One**

| Fall Semester | | Credit Hours |
|----------------------|--|---------------------|
| APPM 1350 | Calculus 1 for Engineers | 4 |
| CHEN 1201 | General Chemistry for Engineers 1 | 4 |
| CHEM 1114 | Laboratory in General Chemistry 1 | 1 |
| MCDB 1150 | Introduction to Cellular and Molecular Biology | 3 |
| BMEN 1025 | Computer-Aided Design & Fabrication | 4 |
| COEN 1500 | CEAS First Year Seminar | 1 |
| Credit Hours | | 17 |

Spring Semester

| | | |
|---------------------|---------------------------------------|-----------|
| BMEN 1000 | Exploring Biomedical Engineering | 1 |
| APPM 1360 | Calculus 2 for Engineers | 4 |
| CHEM 1133 | General Chemistry 2 | 4 |
| CHEM 1134 | Laboratory in General Chemistry 2 | 1 |
| CHEN 1310 | Introduction to Engineering Computing | 3 |
| PHYS 1110 | General Physics 1 | 4 |
| Credit Hours | | 17 |

Year Two**Fall Semester**

| | | |
|--|---|-----------|
| BMEN 2100 | Biomedical Engineering Principles and Methods | 3 |
| APPM 2350 | Calculus 3 for Engineers | 4 |
| PHYS 1120 | General Physics 2 | 4 |
| MCDB 1161 | From Dirt to DNA: Phage Genomics Laboratory I | 2 |
| Humanities or Social Science Elective ¹ | | 2 |
| Credit Hours | | 15 |

Spring Semester

| | | |
|---------------------|--|-----------|
| BMEN 2010 | Biomaterials | 3 |
| APPM 2360 | Introduction to Differential Equations with Linear Algebra | 4 |
| CHEM 3311 | Organic Chemistry 1 | 4 |
| CHEM 3321 | Laboratory in Organic Chemistry 1 | 1 |
| MCEN 2023 | Statics and Structures | 3 |
| PHYS 1140 | Experimental Physics 1 | 1 |
| Credit Hours | | 16 |

Year Three**Fall Semester**

| | | |
|-----------|---------------------|---|
| BMEN 3010 | Biotransport | 3 |
| CHEM 3331 | Organic Chemistry 2 | 4 |

| | | |
|--|---|------------|
| CHEM 3341 | Laboratory in Organic Chemistry 2 | 1 |
| Humanities or Social Science Elective ¹ | | 3 |
| BMEN 4117 | Anatomy and Physiology for Biomedical Engineering | 3 |
| ECEN 2250 | Introduction to Circuits and Electronics | 3 |
| Credit Hours | | 17 |
| Spring Semester | | |
| BMEN 3030 | Bioinstrumentation | 4 |
| CHEN 3010 | Applied Data Analysis | 3 |
| MCDB 2150 | Principles of Genetics | 3 |
| ECEN 3301 | Biomedical Signals and Systems | 3 |
| BCHM 4611 | Principles of Biochemistry | 3 |
| Credit Hours | | 16 |
| Year Four | | |
| Fall Semester | | |
| BMEN 4010 | Biomedical Engineering Capstone Design I | 3 |
| Humanities or Social Science Elective ¹ | | 3 |
| Eng Technical Elective ³ | | 6 |
| Writing Requirement ² | | 3 |
| Credit Hours | | 15 |
| Spring Semester | | |
| BMEN 4020 | Biomedical Engineering Capstone Design II | 3 |
| Focus Technical Elective ³ | | 3 |
| Humanities or Social Science Elective ¹ | | 6 |
| Free Electives | | 3 |
| Credit Hours | | 15 |
| Total Credit Hours | | 128 |

¹ Students may choose courses from the list of college-approved humanities and social sciences (HSS) electives.

² Students may choose a course from the list of college-approved writing courses.

³ Choose 9 credit hours of 3000 level or above of Engineering Technical Electives, including 3 credit hours from the BME focused electives list. Visit the program's Advising & Curriculum webpage for options.

Learning Outcomes

Program Educational Objectives

The biomedical engineering program at CU Boulder is dedicated to preparing each of our graduating students for one or more the following achievements within 5-10 years of receiving their undergraduate degrees:

- Professional engineering employment in life sciences and healthcare industries, in interdisciplinary areas including but not limited to the medical device industry, engineering consulting, biomechanics, digital health and biotechnology, with promotions and increasing levels of leadership and responsibility over time.
- Completion of graduate degree in biomedical engineering or related fields, with subsequent employment in academy, industry or related professions.

- Completion of medical or other professional school, with subsequent placement in residency, clinical practice and/or other professional employment.

General Learning Outcomes

By the completion of the program, students will be able to:

- Identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

Biomedical Engineering Specific Outcomes

Upon graduation, students will be able to:

- Apply principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations) and statistics.
- Solve biomedical engineering problems, including those associated with the interaction between living and non-living systems.
- Analyze, model, design and realize biomedical engineering devices, systems, components or processes.
- Make measurements on and interpret data from living systems.

Bachelor's–Accelerated Master's Degree Program(s)

The bachelor's–accelerated master's (BAM) degree program options offer currently enrolled CU Boulder undergraduate students the opportunity to receive a bachelor's and master's degree in a shorter period of time. Students receive the bachelor's degree first but begin taking graduate coursework as undergraduates (typically in their senior year).

Because some courses are allowed to double count for both the bachelor's and the master's degrees, students receive a master's degree in less time and at a lower cost than if they were to enroll in a stand-alone master's degree program after completion of their baccalaureate degree. In addition, staying at CU Boulder to pursue a bachelor's–accelerated master's program enables students to continue working with their established faculty mentors.

BS and MS in Biomedical Engineering

Admission Requirements

In order to gain admission to the BAM program named above, a student must meet the following criteria:

- Have a cumulative GPA of 3.000 or higher.
- Have no MAPS deficiencies (students admitted to CU Boulder prior to Summer 2023 only).
- Have at least junior class standing.
- Have completed all prerequisite courses with a passing grade at the time of admission: BMEN 2000 or BMEN 2100; BMEN 2010 and BMEN 3010.

Program Requirements

Students may take up to and including 12 hours while in the undergraduate program which can later be used toward the master's degree. However, only 6 credits may be double-counted toward the bachelor's degree and the master's degree. Students must maintain a 3.000 GPA while in the BAM program.

Students must apply to graduate with the bachelor's degree and apply to continue with the master's degree early in the semester in which the undergraduate requirements will be completed.