**College of Engineering and Applied Science: MS Bioengineering Program Sheet**

The Master of Science in bioengineering requires 30 credit hours of coursework, including 3 to 6 credit hours of a master’s project or thesis. Be sure to check the [course catalog](https://catalog.ucdenver.edu/cu-denver/graduate/) for updated semester offerings.

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| **Life Sciences Core (3 credits)** | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
| BIOE 5010 - Cell & Molecular Biology for Bioengineers (Fall) |  |  |  |
| BIOE 5011 - Systems Physiology for Bioengineers (Spring) |  |  |  |
| Life Sciences Core Earned Credit Subtotal: | | |  |

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| **Quantitative Methods Core (3 credits)** | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
| BIOE 5020 – Analytics and Machine Learning (Fall) |  |  |  |
| Quantitative Methods Core Earned Credit Subtotal: | | |  |

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| **Technology Core (6 credits) -** Choose a minimum of 6 credits (usually two courses) from the following list. Please refer to the current class schedule for fall/spring course offerings. | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
| BIOE 5010 - Cell and Molecular Biology for Bioengineers (if not taken for Life Sciences core) Fall |  |  |  |
| BIOE 5011 - Systems Physiology for Bioengineers (if not taken for Life Sciences core) Spring |  |  |  |
| BIOE 5021 - Numerical Methods for Engineering Analysis (Spring) |  |  |  |
| BIOE 5053 - Optics and Microscopy in Biomedical Research (Fall) |  |  |  |
| BIOE 5054 - Regulatory Affairs (Fall) |  |  |  |
| BIOE 5057 - Rehabilitation and Assistive Technology (Fall) |  |  |  |
| BIOE 5063 - 3D Modeling for Bioengineers (Fall) |  |  |  |
| BIOE 5064 - Advanced MatLab for Bioengineers and Life Scientists (Fall) |  |  |  |
| BIOE 5068 - Introduction to Medical Imaging (Fall) |  |  |  |
| BIOE 5067 – Human Factors and Usability Testing (Spring) |  |  |  |
| BIOE 5069 - Advanced Biomechanics (Fall, not offered every year) |  |  |  |
| BIOE 5073 - Neural Interfaces & Bionic Limbs (Spring) |  |  |  |
| BIOE 5083 - Polymers in Biomedical Applications (Spring) |  |  |  |
| BIOE 5420 - Special Topics in Bioengineering:   * Introduction to Design, Disability, and Aging (Spring) * Mechatronics (Fall) * Stem Cell and Regenerative Medicine (Fall) * Medical Device Design and Entrepreneurship (Fall) * Data Science Methods (Spring, not offered every year) * MedTech Commercialization (1 credit, Fall) * Medical Device & Entrepreneurship: Market Access (2 credits, Spring) * Image Processing for Bioengineers (Spring) * Anatomy & Physiology & Medical Terminology (Spring) * Bioengineering & Diabetes (1 credit, Spring, not offered every year) |  |  |  |
| * BIOL 6764 - Biological Data Analysis (4 credits, Spring) |  |  |  |
| CSCI 5211 - Mobile Computing and Programming (*Check course catalog*) |  |  |  |
| MECH 5020 – Biomechanics (Spring) |  |  |  |
| MECH 5025 - Advanced Biomechanics (Fall) |  |  |  |
| MECH 5175 - Finite Element Stress Analysis (Fall) |  |  |  |
| MECH 5143 - Theory of Elasticity (Spring) |  |  |  |
| **Students may also apply the following courses from the University of Colorado Boulder toward the Technology Core Requirement.** |  |  |  |
| Course ID and Title | | | |
| MCEN 5115 - Mechatronics & Robotics I (Boulder) | Semester Taken | Grade | Credits Earned |
| MCEN 5023 - Solid Mechanics I (Boulder) |  |  |  |
| Technology Core Earned Credit Subtotal: |  |  |  |
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| **Research & Clinical Core (3 credits)** | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
| BIOE 5041 - Clinical Experiences for Bioengineers (1 credit, Spring) |  |  |  |
| BIOE 5040 - Research Methods for Bioengineers (2 credits, Spring) |  |  |  |
| Research & Clinical Core Earned Credit Subtotal: | | |  |

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| **Electives (9-12 credits) – In sciences, engineering, business, or related to the MS thesis or project** | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
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| Research & Clinical Core Earned Credit Subtotal: | | |  |

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| **Research (3-6 credits either Thesis or Project)** | | | |
| Course ID and Title | Semester Taken | Grade | Credits Earned |
| BIOE 6950 - MS Thesis |  |  |  |
| BIOE 6960 - MS Project |  |  |  |
| Research & Clinical Core Earned Credit Subtotal: | | |  |