

### SCHOOL OF BIOMEDICAL ENGINEERING

#### Overview of the Certificate

The School of Biomedical Engineering offers undergraduate students the opportunity to earn an interdisciplinary certificate to complement their primary major. This 21 credit certificate is similar to a minor and is open to *all majors*. It is designed to introduce students to biomedical engineering and strengthen their skills in engineering and science. A solid foundation in biomedical engineering (and engineering in general, which includes chemistry, physics, and calculus), life sciences (particularly, anatomy and physiology), and a familiarity with the clinical environment are required to obtain the interdisciplinary studies certificate in biomedical engineering.

Students pursuing the Biomedical Engineering Program Certificate should plan on adding an additional semester to their anticipated graduation date. However, most students will be able to count some of the Biomedical Engineering Certificate requirements toward their specific degree requirements. Check with Lori Dwyer, Biomedical Engineering Advisor, for prerequisite requirements on required courses and electives.

#### Certificate Coursework

By working closely with your advisor, you can take classes that will count towards your certificate and your major requirements! All Biomedical Engineering Certificate students will be required to take the following three courses:

- Biomedical Engineering (3 credits)
- Principles of Human Physiology (4 credits)
- Medical Terminology (1 credit)

Biomedical engineers typically require training in both a traditional engineering field as well as life sciences. Therefore, students majoring in engineering will focus their remaining certificate elective courses on life sciences. Conversely, those with a science background will concentrate on strengthening their engineering knowledge.

#### Preparing to Study Biomedical Engineering

In **high school**:

- Focus on academic courses emphasizing English, mathematics, physics, and sciences.
- Develop good study habits and strong time management skills.

As an **undergraduate student**:

- Meet regularly with your advisors to make sure you are making the most of out of your class schedule.
- Sign up for the certificate as early as possible in order to build it into your schedule and capitalize on the various courses.
- Take advantage of internship and volunteer opportunities.



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#### Potential Occupations

Biomedical engineers develop devices and procedures that solve medical and health-related problems by combining their knowledge of biology and medicine with engineering principles and practices. Many do research, along with life scientists, chemists, and medical scientists, to develop and evaluate systems and products such as artificial organs, prostheses (artificial devices that replace missing body parts), instrumentation, medical information systems, and health management and care delivery systems. Biomedical engineers may also design devices used in various medical procedures, imaging systems such as magnetic resonance imaging (MRI), and devices for automating insulin injections or controlling body functions. Most engineers in this specialty need a sound background in a traditional engineering, such as mechanical, chemical, electrical engineering, etc. in addition to specialized biomedical training. Some specialties within biomedical engineering include biomaterials, biomechanics, medical imaging, and orthopedic engineering. *(U.S. Bureau of Labor Statistics)*

Many graduates with the Biomedical Engineering Certificate pursue graduate school in biomedical engineering as well as professional programs including medicine and veterinary medicine. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance your practical training and development. Graduates who continue on with advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

#### Related Student Organizations

- Biomedical Engineering Society Student Chapter
- Engineering Legislature
- Tau Beta Pi Honor Society
- Society of Women Engineers
- Society of Black Engineers and Scientists
- Society of Hispanic Professional Engineers
- American Indian Science and Engineering Society
- Society of Physics Students

#### For more information:

##### School of Biomedical Engineering

AR204 Engineering Building (Arcade)  
 Colorado State University  
 Fort Collins, CO 80523-1376  
 (970) 491-71557  
[www.engr.colostate.edu/sbme/](http://www.engr.colostate.edu/sbme/)  
 (Academic, career and admissions advising)

##### College of Engineering

102 Engineering Building (Arcade)  
 Colorado State University  
 Fort Collins, CO 80523-1301  
 (970) 491-1058  
[www.engr.colostate.edu/es/](http://www.engr.colostate.edu/es/)  
 (Academic and career advising for majors)

##### Office of Admissions

Spruce Hall  
 Colorado State University  
 Fort Collins, CO 80523-8020  
 (970) 491-6909  
[www.admissions.colostate.edu/](http://www.admissions.colostate.edu/)  
 (Admission applications/University visits)

##### The Career Center

Ammons Hall, 711 Oval Drive  
 Colorado State University  
 Fort Collins, CO 80523-8008  
 (970) 491-5707  
[www.career.colostate.edu](http://www.career.colostate.edu)  
 (Major and career exploration/Job and internship information)



#### School of Biomedical Engineering (SBME) Facts

- Number of biomedical engineering certificate students: 48
- Number of biomedical engineering graduate students: 20
- Number of colleges involved with SBME: 4
- Number of departments involved with SBME: 14
- Number of Core Faculty: 31
- College of Engineering research expenditures in 2006-2007: \$52,784,092
- Research Themes:
  - Biomaterials and Biomechanics
  - Molecular, Cellular and Tissue Engineering
  - Medical Diagnostics, Devices and Imaging