

# Graduate Certificate in Biomedical Product Design

The purpose of the certificate is to attract and serve regional professionals whose focus is on working in industry and who are seeking additional training in design and development of biomedical products. Also, because KU does not currently offer an undergraduate Bioengineering/ Biomedical Engineering degree, the Certificate in Biomedical Product Design offers additional training in Bioengineering, that will better prepare them for a career in industry and may be a step toward a graduate degree. The certificate will prepare students to be more effective in their careers in private commercial firms or with entrepreneurship in a start-up company. Certificate in Biomedical Product Design may also serve part-time professional students as a stepping stone toward a graduate degree.

The admission requirements for the Certificate in Biomedical Product Design program are similar to the Bioengineering MS degree entrance requirements for the Biomedical Product Design & Development Track, though simplified. Students will apply to the BIOE program for the Certificate in Biomedical Product Design.

The application will include a resume and transcripts. The applications will undergo administrative review to ensure the applicant meets the minimum requirements. All applicants must meet the requirements of the University of Kansas Graduate School and the additional requirements below.

- Overall undergraduate Bachelor's Degree with a GPA: greater than 3.00 (out of 4.0) from a post-secondary institution
- Applicants for the Certificate in Biomedical Product Design should have a baccalaureate degree in engineering, the biological sciences, physical sciences, or a related field.
- For applicants with degrees from non-USA institutions:
  - TOEFL – Scores commensurate with Graduate School requirements, or
  - IELTS – Scores commensurate with Graduate School requirements
- In addition, the student must meet the general coursework requirements below for admission. Students who do not meet *Biomedical Product Design & Development preparation* requirements at the time of application may be admitted with deficiencies.
  - *General Coursework:*
- Mathematics through differential equations and linear algebra (MATH 220 and MATH 290; or equivalents)
- One year of physics (through PHSX 212, or the equivalent)
- One course in general chemistry (CHEM 150 or 130, or the equivalent)
- One course in molecular/cell/human biology (BIOL 100 or BIOL 150, or the equivalent)
- *Biomedical Product Design & Development preparation courses:*
- Science of Materials: ME 306 (or equivalent) (3); or ME 765 Biomaterials (can be as part of the certificate program) (3).
- Computer Programming: ME 208/EECS 138/CPE 121 (or equivalent) (3).

- Engineering Design: ME 501, CPE 613, EECS 501 (or equivalent) (3).
- One of the following three options:
  - Statics, Dynamics and Mechanics of Materials: ME 211, CE 201, ME 320, ME 311, CE 310 (or equiv.) or ME 633 (as part of grad program)
  - Circuits/Electronics Lab: EECS 316, EECS 318 or equiv. (3)
  - Fluids: ME 510, CPE 511, or equiv. (3) OR ME 756 (as part of grad program)

To receive the graduate Certificate in Biomedical Product Design, students must complete a minimum of 12 credit hours of coursework with the following requirements:

## Required Course (3 credit hours):

Code	Title	Hours
ME 760	Biomedical Product Development	3

## Core Course (3 credit hours):

Code	Title	Hours
ME 696	Design for Manufacturability	3
ADS 560	Topics in Design: _____ (must be an approved biomedical project)	3
ADS 710	Advanced Human Factors in Interaction Design	3

## Elective Courses (6 credit hours):

Code	Title	Hours
Any core course not used to fulfill the core requirement		
BIOE 802	Bioengineering Internship	3
ME 765	Biomaterials	3
ME 767	Molecular Biomimetics	3
ME 790	Special Topics: _____ (Bioadditive Manufacturing and/or Biomedical Microdevices)	3
C&PE 715	Topics in Chemical and Petroleum Engineering: _____ (Drug Delivery and/or Polymer Science)	3
C&PE 752	Tissue Engineering	3
EECS 644	Introduction to Digital Signal Processing	3
EECS 721	Antennas	3
EECS 728	Fiber-optic Measurement and Sensors	3
EECS 738	Machine Learning	3
EECS 741	Computer Vision	3

or other Design course(s) as approved by the Bioengineering Program Director