

The Department of Engineering

Biomedical Engineering Minor

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About:

Biomedical engineers solve problems in medicine and biology by applying engineering principles to gain new insights into the function of the human body, and design devices, materials and interventions that can improve human health, performance and quality of life. The Biomedical Engineering minor is open to all current Villanova Engineering undergraduates who fulfill the prerequisites.

This minor is open to Engineering students only. Students may pursue either the Biochemical minor or the Biomedical minor, but not both.

Requirements:

The minor requires the successful completion of seven courses (21 credits), two of which are required, four of which are elective courses and one ethics course.

Two Required Courses:

Course	Title	Credits
EGR 2020	Physiology for Engineers	3
EGR 2021	Elements of Biomed Engr	3

Elective Course List A:

Electives are subject to change. Electives may be added to this list at the discretion of the College of Engineering.

Select one course from the list below:

Course	Title	Credits
ECE 5250	Biomedical Instrumentation	3
ECE 5251	Biomedical Signal Processing	3
ECE 5252	Medical Imaging	3
ECE 5770	Organs-on-a-Chip	3
ME 5500	Biomechanics	3
ME 7550	Biomechanics of Hard Tissues	3
ME 7560	Biomechanics of Soft Tissues	3
ME 7700	Tran Phen in Bio Systems	3

Elective Course List B:

Electives are subject to change. Electives may be added to this list at the discretion of the College of Engineering.

SDURIS (Senior Design, Undergraduate Research, or Independent Study) on a topic relevant to biomedical engineering may be substituted for one elective course from List B, with prior written approval from the [Director of the Biomedical Engineering minor program](#).

Graduate courses require additional permissions.

Select three courses from the list below:

Course	Title	Credits
BIO 3225	Imaging Technology	4
CHE 5534	Biomaterials	3
CHE 5535	Bioengineering Lab Techniques	3
CHE 8586	Biomaterials & Drug Delivery	3
ECE 5250	Biomedical Instrumentation	3
ECE 5251	Biomedical Signal Processing	3
ECE 5252	Medical Imaging	3
ECE 5770	Organs-on-a-Chip	3
EGEN 5100	Medical Tech Commercialization	3
ME 5500	Biomechanics	3
ME 7550	Biomechanics of Hard Tissues	3
ME 7560	Biomechanics of Soft Tissues	3
ME 7700	Tran Phen in Bio Systems	3
PSY 2800	Human Factors	3

Ethics Requirement:

The ethics requirement for the minor can also be met using any course (3-credit minimum) that satisfies an ethics elective requirement in the curriculum of the student's major.

Graduate courses require additional permissions.

Select one course from the list below:

Course	Title	Credits
PHI 2115	Ethics for Health Care Prof	3
PHI 4125	Bioethics	3