

Biomedical Engineering with PreMed -- 40 courses	
Core Math and Science	
Sequence Option One	
Course Name	Term Taken
MTH 110 - Calculus 1: Differential Calculus	
MTH 112 - Calculus 2: Integral Calculus	
MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory	
MTH 117 - Calculus 4: Integral Vector Calculus	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	
Sequence Option Two	
Course Name	Term Taken
MTH 113 - Accelerated Single-Variable Calculus	
MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory	
MTH 117 - Calculus 4: Integral Vector Calculus	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	
Sequence Option Three	
Course Name	Term Taken
MTH 113 - Accelerated Single-Variable Calculus	
IMP 120 - Integrated Math/Physics	
IMP 121 - Integrated Math/Physics	
<i>Other calculus sequences are possible depending upon a student's background.</i>	
Additional Math and Science Requirements	
Course Name	Term Taken
MTH 130 - Ordinary Differential Equations OR MTH 234 - Differential Equations	
CHM 101 - Introductory Chemistry 1 OR	
CHM 110H - Honors Introductory Chemistry (Covers CHM 101+102)	
Biological Science Requirements	
Course Name	Term Taken
BIO 104 - (112) Cellular Foundations of Life	
BIO 205 - Topics in Molecular Biology	
BIO 206 - Topics in Physiology	
BIO 3xx - One Biological Science elective numbered 300 or higher	
Engineering and Computer Science	
Course Name	Term Taken
ESC 100 - Exploring Engineering	
CSC 10x - Introduction to Computer Science (choose a course from CSC103-107)	
Biomedical Engineering Core	
Course Name	Term Taken
BME 101 - Graphics and Image Processing for Biomedical Systems	
BME 201 - Biomechanics 1	
BME 202 - Biomechanics 2	
BME/ECE 225 - Electric Circuits	
BME/ECE 240 - Circuits and Systems [WAC]	
BME/ECE 241 - Discrete Systems [WAC]	
BME 311 - Advanced Biomechanics	
BME 331 - Cell-Tissue-Material Interaction	
BME 386 - Introduction to Biomedical Instrumentation	

Biomedical Engineering Electives	
Four courses from BME, ECE, CSC 243 or other engineering courses subject to approval with at least three at the 300 level or higher. Students should consult with their advisors	
Course Name	Term Taken
BME/ECE	
BME/ECE (>300)	
BME/ECE (>300)	
BME/ECE (>300)	
Biomedical Capstone Design	
Course Name	Term Taken
BME 495 - Biomedical Engineering Capstone Design 1	
BME 496 - Biomedical Engineering Capstone Design 2	
Common Curriculum Courses	
A full description of Common Curriculum Requirements is available here: https://www.union.edu/files/general-education/201807/genedadvising170.pdf	
Course Name	Term Taken
SCLB, QMR, SET - these requirements are fulfilled automatically through courses in the major	
FYP - First Year Preceptorial	
SRS - Sophomore Research Seminar	
SOCS - Social Science (ANT/ECO/HST/PSC/PSY/SOC): <i>Recommended Introductory Psychology / Sociology</i>	
HUM - Humanities (ATH/AVA/CLS/EGL/MLL/PHL):	
HUL - Humanities Literature:	
LCC - Linguistic and Cultural Competency (†):	
LCC - Linguistic and Cultural Competency (†):	
† may be fulfilled by Study Abroad OR 2 LCC courses OR a sequence of 2 courses in the same language designated as LCC (note that the first course listed in any language (e.g., FRN 100, SPN 100, LAT 101, GRK 101 etc.) does not carry LCC credit)	
Free Electives (PreMed Requirements)	
Course Name	Term Taken
BIO 103 - Diversity of Life: Heredity, Evolution, Ecology	
*CHM 102 - Introductory Chemistry 2	
CHM 231 - Organic Chemistry 1	
CHM 232 - Organic Chemistry 2	
* If an AP Chemistry credit is transferred in, and if placed into CHM 110H, this will satisfy the requirement of taking CHM 101 & CHM 102	
5 Writing Across the Curriculum (WAC) Courses [Drawn from Courses Above]	
Course Name	Term Taken
BME/ECE 240 - Circuits and Systems	
BME/ECE 241 - Discrete Systems	
WAC from outside Engineering & Computer Science -	
Course Selection Guidelines:	
Course Sequence: Students should consult with their academic advisor and the following yearly requirements when scheduling courses. Some 300 level courses are not offered every year, and some of these courses will be taken outside of the year indicated. Senior Projects: Students interested in working with a faculty member on a two-term Senior Project should meet with potential faculty advisors during their junior year to identify a project; students should notify one of the Program Directors when this process is complete. The first course (BME 497) will count as a Free Elective and BME 498 will count as a BME Elective.	
Requirements for Honors:	
The criteria for graduating with honors in Biomedical Engineering are: (1) a cumulative index of at least 3.3; (2) a cumulative index in major courses of at least 3.3, with an A or A- in at least three of those courses; (3) an A or A- in the capstone design course or a senior research project; (4) final six terms of courses at Union. The major courses are listed above under "Foundation and core courses for Biomedical Engineering," "Biomedical Engineering electives" and "Capstone design".	