

Technical Engineering Electives in Biomedical Engineering

(Updated 6/26/13)

The Biomedical Engineering undergraduate curriculum is designed to prepare students for the next step in their career path. The curriculum has a solid foundation in engineering, and includes a balance of breadth and depth in Biomedical Engineering courses. Students are able to select courses in the Junior and Senior years to create a concentration in a specific BME Domain. This is done through the selection of courses in the BME Domains, Advanced BME courses, and Technical Engineering Electives categories. Students should carefully consider the courses to be counted for the Technical Engineering Electives, as they help to build the optimum breadth and depth for the desired career objectives.

BME has developed a set of general criteria that students must follow in selecting the Technical Engineering Elective courses.

BME Technical Engineering Electives must meet the following criteria:

- The course must be offered from the College of Engineering
- The course number must be at a level of 3000 or above, or below 3000 if it is listed in Table
- All BME courses at the 5000 level can count as an engineering elective course.
- The courses should relate in some way to the student's selected Domain area

Student Petition for Exceptions: Students are encouraged to petition to the BME Undergraduate Studies Committee (USC) to take courses they find interesting, but are not found in the Table. This should be done well in advance (at least 1 month) before time of scheduling, so that the USC has time to meet and discuss the request. The student should include a syllabus of the course with the petition.

Course Table

The Table provides a sample of courses OUTSIDE OF BME that students may choose to take. The courses by grouped by Domain Areas to help with selection. The Table is not comprehensive or exhaustive, and students will want to search the Master Schedule to find other appropriate courses. Also be aware that some courses may have pre-requisites associated with the course.

BIOIMAGING		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
CSE 5052	Survey of Artificial Intelligence for Non-Majors	3
CSE 5524	Computer Vision for Human-Computer Interaction	3
ECE 5206	Medical Imaging and Processing	3
ECE 5460	Image Processing	3
BIOTRANSPORT		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
CHBE 2420	Transport Phenomena I	4
CHBE 3521	Transport Phenomena II	4
CHBE 3610	Kinetics & Reactor Design	4

CHBE 5775	Rheology of Fluids	3
CHBE 5790	Modeling and Simulation	3
<u>BIOMATERIALS</u>		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
CBE 5773	Introduction to High Polymer Engineering	3
CHBE 5774	Polymer Membranes	2
MATSCEN 3141	Transformation and Processing of Materials	3
MATSCEN 3261	Introduction to the Mechanical Behavior of Materials	3
MATSCEN 3271	Electronic Properties	3
MATSCEN 3611	Biological Response to Biomaterials	3
MATSCEN 4181	Materials Selection	2
MATSCEN 5611	Materials in Medicine	3
WELDENG 3001	Survey of Welding Engineering	3
WELDENG 4301	Nondestructive Evaluation	3
<u>BIOMECHANICS</u>		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
CHBE 5790	Modeling and Simulation	3
ISE 2500	Manufacturing Engineering	3
ISE 3600	Workplace Ergonomics: Analysis and Design of Physical Work Systems	3
ISE 3700	Cognitive Engineering Systems	3
ISE 5610	Ergonomics in Product Design Process	3
MECHENG 2030	Dynamics	3
MECHENG 5180	Mechanics of Biomolecular Systems	3
MECHENG 6700	Musculoskeletal Biomechanics	3
<u>CELL/TISSUE ENG</u>		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
MATSCEN 3611	Biological Response to Biomaterials	3
MATSCEN 5611	Materials in Medicine	3
MECHENG 5180	Mechanics of Biomolecular Systems	3
<u>MICRO/NANOTECHNOLOGY</u>		
<u>Courses</u>	<u>Title</u>	<u>Credits</u>
CBE 5715	Particle Technology	3
CBE 5717	Interfaces, Colloids and Molecular Self Assembly	3
CBE 5777	Intro to Polymer Engineering at Macro-, Micro-,	3

