

SBME Pre-Approved Electives

In general, electives need to be at a 3000-level or above. The sections below serves as a source of pre-approved course options, however approval from an SBME faculty advisor is recommended when selecting 'Math, Science, & Engineering' electives. Other courses not on this list may be approved with permission by the SBME faculty via the Undergraduate Studies Committee.

Not all classes are offered frequently. Students are responsible for ensuring that the courses will be offered in the semester they intend to take it, and that all prerequisites or other permissions are acquired before enrolling in electives.

Courses less than 3 credit hours will have to be supplemented with another course to account for the credit hour discrepancy. A total of at least 6 credit hours are required for BME electives and a total of at least 6 credit hours are required for 'Science, Math, & Engineering' electives. BME elective course credits, in excess of 6 credit hours can be counted toward 'Science, Math, & Engineering' elective credit hours.

List of Approved Courses for 'Upper Level Biology' Elective

- CHEM 3653 - Introduction to Biochemistry
 - Prerequisite: CHEM 3013, CHEM 3053, or CHEM 3064.
- BIOL 3113 - Cell Biology
 - Prerequisite: 1114, or 1124, or Biology 1134, or Botany 1114, and Chemistry 3053.
- BIOL 3333 - Genetics
 - Prerequisite: ZOO/BIOL 1124, or ZOO/BIOL 1114 and ZOO/BIOL 1121; Biology 1134 recommended
- BIOL 3833 - Introduction to Neurobiology
 - Prerequisite: BIOL 1124
- BIOL 4843 - Intro to Molecular Biology
 - Prerequisite: 1114 or 1124, or Botany/PBIO 1114, or Microbiology 3813 and 3812, and one course in organic chemistry

List of Approved Courses for 'BME' Electives

Aerospace and Mechanical Engineering

AME 4213/5213 Biomechanics I

AME 5203 Bioengineering Principles

AME 5223 Biomechanics II

AME 5233 Biomaterials

AME 5293 Transport in Biological Systems

†BME 3141 Biomechanics Lab

†BME 3151 Mol, Cell, & Tissue Engineering Lab

†BME 3161 Biomedical Micro- & Nanotechnology Lab

BME 3440/3980 Mentored Research (See [Research for Credit Policy](#))

BME 5233 Biomaterials

BME 5970 Topics in Biomedical Engineering

Biomedical Engineering

†BME 3113 Bioimaging

†BME 3123 Biotransport

†BME 3133 Bioelectricity

†BME 3143 Biomechanics

†BME 3153 Molecular, Cellular, & Tissue Engineering

†BME 3163 Biomedical Micro- & Nanotechnology

†BME 3111 Bioimaging Lab

†BME 3121 Biotransport Lab

†BME 3131 Bioelectricity Lab

Chemical, Biological & Materials Engineering

CH E 4203 Bioengineering Principles

CH E 5203 Bioengineering Principles

CH E 5243 Biochemical Engineering

CH E 5273 Biomedical Engineering

CH E 5293 Transport in Biological Systems

Electrical and Computer Engineering

ECE 4843/5843 Medical Imaging Systems

† *If taken in excess of the required BME core area course requirements (4 BME Core Area Courses and 3 BME Core Area Labs).*

List of Approved Courses for 'Science, Math, & Engineering' Elective

Anthropology

ANTH5273 Bioethics, Biotechnology,
Biomedicine

Biology

*BIOL 3333 Genetics
*BIOL 3113 Cell Biology
*BIOL 3833 Intro to Neurology
*BIOL 4843 Intro to Molecular Biology
MBIO 3813 Fundamentals of Microbiology
MBIO 3812 Fund. Microbiology Lab
MBIO 4833 Basic Immunology
BIOL 3103 Principles of Physiology
BIOL 3201 Animal Development Lab
BIOL 3203 Animal Development
BIOL 4244 Animal Histology
BIOL 4233 Neurobiology of Disease
BIOL 4853 Neurobiology of Memory
BIOL 4893 Behavioral Neurobiology
BIOL 4913 Quantitative Biology
BIOL 5153 Endocrine Physiology
BIOL 5293 Cytology Ultrastructure
BIOL 5343 Developmental Genetics
BIOL 5364 Transmission Electron Microscopy
BIOL 5374 Scanning Electron Microscopy
BIOL 5843 Molecular Biology

Chemistry

CHEM 3423 Physical Chemistry
CHEM 3523 Physical Chemistry II
CHEM 3153 Organic Chemistry II
*CHEM 3653 Biochemistry
CHEM 3753 Intro to Biochemical Methods
CHEM 4023 Instrumental Methods in Chemical
Analysis
CHEM 4333 Advanced Inorganic Chemistry
CHEM 5453 Polymer Science
CHEM 5753 Principles of Biochem I
CHEM 5853 Principles of Biochem II
CHEM 6813 Intro to Biochemical Methods
CHEM 6823 Protein, Nucleic Acids, & Gene
Expression
CHEM 6833 Structure & Function of
Membranes & Hormones
CHEM 6843 Enzyme Mechanisms & Metabolic
Regulation

**If not taken as Upper-Level Biology Requirement*

CHEM 6853 Protein Structure & Function

Physics

PHYS 3043 Physical Mechanics
PHYS 3233-001 Modern Physics for Engineers

Engineering

ENGR 3401 Engineering Economics
ENGR 3431 Electromechanical Systems
ENGR 3441 Fluid Mechanics
ENGR 4003 Engineering Practice
ENGR 4013 Leadership & Management for
Engineers
ENGR 4023 Disruptive & Innovative Technology
Ideation
ENGR 4510G Global Environmental Health

Electrical and Computer Engineering

ECE 3323 Intro-Solid State Elec Devices
ECE 3813 Introductory Electronics
ECE 4813 Electronics
ECE 4823 Engineering Principles of the Human
Body
ECE 5213 Digital Signal Processing
ECE 5273 Digital Image Processing
ECE 5523 Random Signals
ECE 5363 Optical Engineering

Industrial Systems Engineering

ISE 4223 Fundamentals of Engineering
Economics
ISE 4553/5553 Data Driven Decision Making I
ISE 4804 Ergonomics in Systems Design
ISE 5033 Systems Engineering

Physics

PHYS 3043 Physical Mechanics
PHYS 3233-001 Modern Physics for Engineers

Math

MATH 3333 Linear Algebra
MATH 3423 Physical Math II
MATH 4163 Intro Partial Diff. Equations
MATH 4373/5373 Abstract Linear Algebra
MATH 4383/5383 Modern Algebra

Courses not approved as electives:

- Anything below 3000 level
- *Courses cannot be double counted for the 'Upper-Level Biology Elective' and a 'Science, Math, & Engineering' Elective
- Courses cannot be double counted for 'Science, Math, & Engineering' and 'BME electives'.
- Any other courses already fulfilling another graduation requirement (e.g., ENGR 3511 Transfer Engineering Experience).