

Biomedical Engineering Undergraduate Program
Approved Technical Electives
Updated: April 2017

Students must take **18 credits** (usually 6 courses) of Technical Electives. Technical Electives in the Bachelor of Biomedical Engineering curriculum provide the students with an opportunity to pursue areas of particular interest and depth. Technical electives must meet the following criteria: (1) being primarily technical, (2) having a skill or theory component, and (3) being above an introductory level or having a high level of technical rigor. Because biomedical engineers work in a wide range of technical areas, the approved list of technical electives includes courses across departments.

At least 6 credits (2 courses) must be selected from the BME Technical Electives list:

BMEG 350- Clinical Immersion for Engineers
BMEG 411- Advanced Techniques in Cell & Tissue
BMEG 440/640- Attachments in Biology
BMEG 441/641- Biomechanics
BMEG 442- Engineering Exercise and Sports
BMEG 461/661- Cell Engineering
BMEG 462/662- Engineering Biomedical Nanostructures
BMEG 463/663- Mechanotransduction
BMEG 464- Medical Device Development
BMEG 471/671 (cross-listed with ELEG)- Mathematical Physiology
BMEG 479- Introduction to Medical Imaging Systems
BMEG 665- Tissue Biomechanics and Modeling
MSEG 460/660- Biomaterials and Tissue Engineering
(excluding BMEG 366/466)

At least 3 credits (1 course) must be selected from the following Engineering list below –OR– the BME list above:

Biomedical Engineering: BMEG 366/466 (independent study)
Chemical Engineering: CHEG 420, 460, 600, 608, 624, 648, 649, 660, 672
Civil and Environmental Engineering: CIEG 302, 305, 320, 321, 323, 331, 333, 337, 343, 351, 400-699
(except CIEG 461, 466, 469, 481, 486, 657)
Computer and Information Sciences: CISC 181, 220, 260, 275, 303, 304, 320, 360, 361, 364, 372, 374,
400-699 (except CISC 409/609, 449/649, 459/659, 473, 489/689, 611, 666, 691, 699)
Computer Engineering: CPEG 202, 222, 323, 324, 400-600 (except CPEG 496/696, 498, 499, 611, 691)
Electrical Engineering: ELEG 302, 303, 306, 309, 310, 312, 313, 320, 340, 400-699 (except ELEG 440/640,
466, 491, 496, 498, 499, 661-664)
Materials Science and Engineering: MSEG 400-699 (except 420/620, 425/625, 443/643, 466, 615, 650,
666, and cannot take 2 MSEG classes with the same 2 last numbers)
Mechanical Engineering: MEEG 202, 300-699 (except MEEG 401, 483)

Additional 9 credits (3 courses) may be selected from the STEM list below –OR– any of the lists above:

Biomedical Engineering: BMEG 366/466 (independent study)
Biology: BISC 208, 300-499 (except 306, 326, 400, 422, 451, 452, 466, 468, 498, 510, 530, 603, 631)
Chemistry: CHEM 220, 322, 326, 437, 443, 444, 527, 608
Kinesiology and Applied Physiology: KAAP 220, 428, 430
Mathematics: MATH 315, 350, 400-699 (except 540, 580, 583, 584, 585, 586, 588, 590, 591, 607)

Medical Laboratory Sciences: MEDT 380, 390/391, 400, 401/411, 403/413, 404/414, 405/415, 406/416, 409/419, 420/421, 430/431, 640

Neuroscience: NSCI 320, 400-699 (except NSCI 468, 631)

Physics: PHYS 311, 313, 333, 424, 434, 460/660, 603, 604, 620, 644, 646, 655, 669

Statistics: STAT 409/609, 418, 420, 474, 601, 602, 603, 611, 615, 656, 674, 675

Thesis: UNIV 401, 402 (topic must be approved by BME Undergraduate Education Committee)

Students may take up to 6 credits of Independent Study (BMEG 366/466) as engineering and STEM technical electives. The independent study project must be approved by the faculty advisor and by the BME Undergraduate Education Committee representative to count as a technical elective. Additional upper-level and graduate-level courses may also be reviewed and approved by the BME Undergraduate Education Committee.