Biomedical Engineering – 2020 (134 credits)

Freshman 1
- CAS MA 123 Calculus I (4 credits)
- ENG EK 100 Freshman Seminar (4 credits)
- CAS CH 101 Chemistry I (4 credits)
- ENG EK 127 Intro to ENG Computation (4 credits)
- CAS WR 100 Writing Seminar (4 credits)

Freshman 2
- CAS MA 124 Calculus II (4 credits)
- CAS PY 211 Physics I (4 credits)
- CAS CH 102 Chemistry II (4 credits)
- ENG EK 131/2 Intro to ENG 2 (2 credits)
- ENG EK 102 Intro Lin Alg (2 credits)

Sophomore 1
- CAS MA 225 Multivariate Calculus (4 credits)
- CAS PY 212 Physics II (4 credits)
- ENG EK 307 Electric Circuits (4 credits)
- ENG EK 210 Intro ENG Des (2 credits)
- CAS WR 150 Writing & Res Seminar (4 credits)

Sophomore 2
- CAS MA 226 Differential Equations (4 credits)
- ENG BE 209 Princ Molec Cell Bio & Biotech (4 credits)
- ENG EK 301 Eng Mechanics (4 credits)
- ENG BE 200 Intro Prob BME (2 credits)

Junior 1
- ENG EK 424 Thermo & Stat Mech (4 credits)
- CAS BI 315 Systems Physiol (4 credits)
- ENG BE 403 Signals & Cntrls (4 credits)
- ENG BE 491 BME Meas I (2 credits)

Junior 2
- BME Elective (4 credits)
- BME Elective (4 credits)
- Fields Elective (4 credits)
- ENG BE 492 BME Meas II (2 credits)

Senior 1
- ENG Elective (4 credits)
- BME Design Elective (4 credits)
- ENG BE 465 Senior Design I (2 credits)

Senior 2
- BME Elective (4 credits)
- Professional Elective (4 credits)
- Professional Elective (4 credits)
- ENG BE 466 Senior Design II (4 credits)

Notes
- Grey box = either semester
- = prerequisite; = corequisite
- Students planning to study abroad sophomore 2 should take EK 301 in sophomore 1.
- Premed students take CAS CH203/4 sophomore year and defer WR 150 and Hub elective.
- Students must complete 48 credits of upper-division program coursework (not including social science/humanities or writing).

General Education Electives Checklist
- 1. CAS WR 100
- 2. CAS WR 150
- 3. One Social Science course
- 4. One Humanities course
- 5. One Social Science or Humanities course
- 6. One General Education elective course
- 7. Total of at least 24 credits
REQUIREMENTS

Biomedical Engineering majors are required to complete a minimum of 134 credits as detailed on the Program Planning Sheet on the other side of this page. Pre-Med Majors should consult with the BU Pre-Professional Advising Office and their ENG Faculty Advisors.

GENERAL EDUCATION

For a list of specific courses that satisfy the Social Science, Humanities and General Education Elective, please go to the College of Engineering Undergraduate Requirements website at: http://www.bu.edu/eng/current-students/ugrad/requirements/.

CONTINUA & FIELDS IN BIOMEDICAL SYSTEMS ELECTIVE

Biomedical Engineering majors complete one Continua & Fields Elective from the following:

- ENG BE 419 Principles of Continuum Mechanics & Transport*
- ENG BE 420 Introduction to Solid Biomechanics
- ENG BE 435 Transport Phenomena in Living Systems
- ENG BE 436 Fundamentals of Fluid Mechanics

PROFESSIONAL ELECTIVES

Biomedical Engineering majors complete two Professional Electives (8 credits) from the following:

All ENG BE, EC, EK, and ME 300, 400, and 500 level courses are suitable as a professional elective (except BE 500, and courses with material that overlaps with requirements – see Notes below).

CAS CH 203, CAS CH 204 and all CAS CH 300, 400 and 500 level courses (except: CAS CH 391, 392, 401, 402, 491, 492).

All CAS PY 300, 400, and 500 level courses (except PY 371, 401, 402, 482, 491, 492).

All CAS MA 300, 400, and 500 level courses (except CAS MA 381, 401, 402).

CAS BI 206, CAS BI 216 and all CAS BI 300, 400 and 500 level courses (except BI 315, 371, 372, 391, 392)

ENG EK 156 Design & Manufacture*
SAR HS 360 Muscle Biology in Health & Disease
QST SI 480 The Business of Technology Innovation
QST SI 482 Technology & Its Commercialization

ENGINEERING ELECTIVES

Biomedical Engineering majors complete one Engineering Elective course from the following list:

ENG BE 400 Biomedical Special Topics
ENG BE 404 Advanced Controls
ENG BE 419 Principles of Continuum Mechanics*
ENG BE 420 Intro to Solid Biomechanics
ENG BE 435 Transport Phenomena in Living Systems
ENG BE 436 Fundamentals Fluid Mechanics
ENG BE 503 Comp Methods in Biomed
ENG BE 508 Quant Studies Resp & Card Sys
ENG BE 511 Biomedical Instrumentation
ENG BE 521 Continuum Mechanics BME
ENG EC 311 Intro to Logic Design
ENG EC 327 Intro Software Engineering
ENG EC 410 Intro to Electronics
ENG EC 455 Electromagnetic Systems I
ENG EC 471 Physics Semiconductor Devices
ENG EC 505 Stochastic Processes
ENG EC 508 Nanomaterials & Nanotechnology
ENG EC 510 Intro to Electronics
ENG EC 571 Physics Semiconductor Devices
ENG EC 580 Nanomaterials & Nanotechnology
ENG ME 302 Engineering Mechanics II
ENG ME 306 Materials Science
ENG ME 309 Structural Materials
ENG ME 441 Mechanical Vibrations
ENG ME 555 MEMS: Fabrication & Materials

BIOMEDICAL ENGINEERING ELECTIVES

Biomedical Engineering majors complete three Biomedical Engineering Electives (12 credits) from the following:

All ENG BE 400 and 500 level courses (except BE 500); BE 700 level courses may be petitioned.

BIOMEDICAL ENGINEERING DESIGN ELECTIVES

Biomedical Engineering majors complete one Biomedical Engineering Design Elective from the following:

ENG BE 428 Device Diagnostics & Design
ENG BE 468 Clinical Applications of Biomedical Design

Notes:

For each of the following sets of courses, only one course can be taken for credit in each set due to the overlap of material:

1. ENG ME 403, ENG ME 404, ENG BE 402*, ENG EC 402, ENG BE 404
2. ENG ME 303, ENG BE 436
3. ENG EK 102*, ENG EK 103, CAS MA 142, CAS MA 242
4. ENG BE 401*, ENG BE 403, ENG EC 401
5. ENG ME 366, ENG EC 381*, ENG EK 381, ENG BE 200*
6. ENG ME 460, ENG ME 560
7. ENG EK 156*, ENG ME 358
8. ENG ME 357, ENG ME 359*

*indicates course no longer offered.