Biomedical Engineering – Class of 2026 (133 credits)

**Freshman 1**
- CAS MA 123: Calculus I
  - QR2; CRT
  - 4 credits
- ENG EK 100: Freshman Seminar
  - 4 credits
- CAS CH 101: Chemistry I
  - S11; QR1
  - 4 credits
- ENG EK 125: Program for Engs
  - QR1; CRT
  - 4 credits
- CAS WR 120: Writing Seminar
  - FYW
  - 4 credits

**Freshman 2**
- CAS MA 124: Calculus II
  - QR2; S12; CRT
  - 4 credits
- CAS PY 211: Physics I
  - S11; QR1; CRT; TWC
  - 4 credits
- CAS CH 102: Chemistry II
  - S11; QR1
  - 4 credits
- ENG EK 131: Intro to Eng
  - 2 credits
- ENG EK 103: Comp Lin Alg
  - 3 credits
- CAS WR 15x: Writing & Res WRI; RIL
  - 4 credits

**Sophomore 1**
- CAS MA 225: Multivar Calculus
  - QR2; CRT
  - 4 credits
- CAS PY 212: Physics II
  - S12; QR2; CRT; TWC
  - 4 credits
- ENG EK 307: Electric Circuits
  - 4 credits
- ENG EK 210: Intro Eng Des TWC
  - 2 credits
- Hub Elective
  - 4 credits

**Sophomore 2**
- CAS MA 226: Diff Equ CRT
  - 4 credits
- ENG BE 209: Princ Molec Cell Bio & Biotech
  - 4 credits
- ENG EK 301: Eng Mechanics CRT; CRI
  - 4 credits
- Hub Elective
  - 4 credits

**Junior 1**
- ENG EK 381: Prob, Stats & DS
  - QR2; CRT
  - 4 credits
- CAS BI 315: Systems Physiol
  - S12; CRT; TWC; WIN
  - 4 credits
- ENG BE 403: Signals & Cntrls
  - 4 credits
- ENG BE 491: BME Meas I
  - 2 credits
- Hub Elective
  - 4 credits

**Junior 2**
- ENG EK 424: Thermo & Stat Mech
  - 4 credits
- BME Elective
  - 4 credits
- BME Design Elective
  - 4 credits
- ENG BE 492: BME Meas II
  - 2 credits
- Hub Elective
  - 4 credits

**Senior 1**
- ENG Elective
  - 4 credits
- Fields Elective
  - 4 credits
- ENG BE 465: Senior Design I
  - 2 credits
- Hub Elective
  - 4 credits

**Senior 2**
- BME Elective
  - 4 credits
- Professional Elective
  - 4 credits
- Professional Elective
  - 4 credits
- ENG BE 466: Senior Design II
  - WIN; OSC; DME; RIL
  - 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 151/2/3 and Hub elective.
- Students must complete 48 credits of upper-division program coursework (not including Hub or writing).
- See back for Hub Unit Legend

**Hub Electives: must include all Hub areas below to fulfill degree requirements**

- 1. One unit Philosophical Inquiry & Life’s Meanings (PLM)
- 2. One unit Aesthetic Exploration (AEX)
- 3. One unit Historical Consciousness (HCO)
- 4. One unit Social Inquiry (SO1 or SO2)
- 5. One unit Individual & Community (IIC)
- 6. First unit Global Citizenship & Intercultural Literacy (GCI)
- 7. Second unit Global Citizenship & Intercultural Literacy (GCI)
- 8. One unit Ethical Reasoning (ETR)

- Total of at least 16 credits

4/14/2022
Biomedical Engineering (BME) majors are required to complete a minimum of 133 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.

**HUB ELECTIVES**
All students are required to complete a total of 26 Hub units. Eighteen of these Hub units are included in courses required for the BME BS degree. The remaining eight Hub units must be satisfied through four (or more) Hub Electives that incorporate the following seven Hub areas: Philosophical Inquiry; Aesthetic Exploration; Historical Consciousness; Social Inquiry; Individual in Community; Ethical Reasoning; Global Citizenship & Intercultural Literacy (2X). Search for courses that fulfill specific combinations of Hub units at: [https://www.bu.edu/phpbin/course-search/](https://www.bu.edu/phpbin/course-search/).

**CONTINUUM & FIELDS IN BIOMEDICAL SYSTEMS ELECTIVE**
BME majors complete one Continua & Fields Elective (4 credits) from the following:

ENG BE 420 Introduction to Solid Biomechanics  
ENG BE 435 Transport Phenomena in Living Systems  
ENG BE 436 Fundamentals of Fluid Mechanics

**PROFESSIONAL ELECTIVES**
BME 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 all directed study & directed research, BE 500, and courses with material that overlaps with requirements – see Notes below); directed study and BE 500 may be acceptable by petition.

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 355, 371, 401, 402, 482, 491, 492).

All CAS MA 300, 400, and 500 level courses (except CAS MA 381, 401, 402, 581).

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

ENG ME 357 Intro to CAD (2 cr)  
QST SI 480 The Business of Technology Innovation  
ENG ME 358 Design & Manufacture (2 cr)  
QST SI 482 Technology & Its Commercialization

**ENGINEERING ELECTIVES**
BME majors complete one Engineering Elective course (4 credits) from the following list:

ENG BE 404 Advanced Controls  
ENG BE 420 Intro to Solid Biomechanics  
ENG BE 425 Intro to Biomedical Materials Science  
ENG BE 435 Transport Phenomena in Living Tissues  
ENG BE 436 Fundamentals Fluid Mechanics  
ENG BE 471 Quantitative Neuroscience  
ENG BE 503 Comp Methods in Biomed  
ENG BE 508 Quant Studies Resp & Card Sys  
ENG BE 511 Biomedical Instrumentation  
ENG BE 517 Optical Microscopy of Biological Mtrls  
ENG BE 521 Continuum Mechanics BME  
ENG BE 533 Bioinformatics  
ENG BE 549 Struct & Function Extracell Matrix  
ENG EC 502 Computational Synth Bio for Eng  
ENG EC 556 Optical Spectroscopic Imaging  
ENG EC 567 Nonlinear Systems in BME  
ENG EC 571 Intro to Neuroengineering  
ENG EC 572 Neurotechnology Devices  
ENG EC 573 Intro to Logic Design  
ENG EC 574 Intro Software Engineering  
ENG EC 575 Intro to Electronics  
ENG EC 576 Intro to Machine Learning  
ENG EC 577 Physics Semiconductor Devices  
ENG EC 578 Computing Electromagnetics  
ENG EC 579 Physics Semiconductors  
ENG EC 580 The Business of Technology Innovation  
ENG EC 582 Technology and Its Commercialization  
ENG ME 503 Kinetic Processes in Materials  
ENG ME 504 Computational Synth Bio for Eng  
ENG ME 505 Kinetic Processes in Materials  
ENG ME 506 Optical Spectroscopic Imaging  
ENG ME 507 Nonlinear Systems in BME  
ENG ME 508 Nanomaterials & Nanotechnology  
ENG ME 509 Structural Materials  
ENG ME 510 Heat Transfer  
ENG ME 511 Heat Transfer  
ENG ME 512 Mechanical Vibrations  
ENG ME 513 Mechanical Vibrations  
ENG ME 514 Mechanical Vibrations  
ENG ME 515 MEMS: Fabrication & Materials  
ENG ME 516 Digital/Multimedia Expression  
ENG ME 517 Data Science  
ENG ME 518 Data Science  
ENG ME 519 Data Science

**BIOMEDICAL ENGINEERING ELECTIVES**
BME majors complete two Biomedical Engineering Electives (8 credits) from the following:

All ENG BE 400 and 500 level courses (except BE 451, BE 452 & BE 500); BE 451, BE 500, and 600-level & 700-level courses may be acceptable by petition.

**BIOMEDICAL ENGINEERING DESIGN ELECTIVES**
BME majors complete one Biomedical Engineering Design Elective (4 credits) from the following:

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

**Hub Unit Legend:**

<table>
<thead>
<tr>
<th>QR1 = Quantitative Reasoning 1</th>
<th>WR1 = Writing, Research &amp; Inquiry</th>
<th>RIL = Research and Information Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>QR2 = Quantitative Reasoning 2</td>
<td>WIN = Writing-Intensive Course</td>
<td>TWC = Teamwork/Collaboration</td>
</tr>
<tr>
<td>SI1 = Scientific Reasoning 1</td>
<td>OSC = Oral and/or Signed Communication</td>
<td>CRI = Creativity/Innovation</td>
</tr>
<tr>
<td>SI2 = Scientific Reasoning 2</td>
<td>DME = Digital/Multimedia Expression</td>
<td>CFT = Critical Thinking</td>
</tr>
<tr>
<td>FYW = First-Year Writing Seminar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

a) Any requirement satisfied via AP/IB can earn a maximum of one Hub unit and may require students to replace the Hub units missed.

b) Any requirement satisfied via transfer earns zero Hub units and may require students to replace the Hub units missed.

c) 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 EC 402, ENG BE 404
2. ENG ME 303, ENG BE 436
3. ENG ME 306, ENG BE 425
4. ENG EC 103, CAS MA 142, CAS MA 242
5. ENG BE 403, ENG EC 401
6. ENG EC 381, CAS MA 381, CAS MA 581