Biomedical Engineering – Class of 2025 (133 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 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
REQUIREMENTS

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/).

CONTINUOUS & FIELDS IN BIOMEDICAL SYSTEMS ELECTIVE

BME majors complete one Continua & Fields Elective (4 credits) from the following:

- ENG BE 517 Optical Microscopy of Biological Materials
- ENG BE 468 Clinical Applications of Biomedical Design
- ENG BE 511 Biomedical Instrumentation
- ENG BE 508 Quantitative Studies of Respiratory & Cardiovascular Systems
- ENG BE 436 Fundamentals of Fluid Mechanics
- ENG BE 503 Comp Methods in Biomedical Engineering
- ENG BE 471 Quantitative Neuroscience
- ENG BE 521 Continuum Mechanics
- ENG BE 436 Fundamentals of Fluid Mechanics
- ENG BE 549 Struct & Function Extradural Matrix

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)
ENG ME 358 Design & Manufacture (2 cr)
ENG ME 403, ENG ME 404, ENG EC 402, ENG BE 404
ENG ME 406, ENG EC 402
ENG ME 403, ENG EC 401
ENG EC 311 Intro to Electronics
ENG EC 314 Intro Software Engineering
ENG EC 401
ENG EC 402
ENG EC 327 Intro to Digital Design
ENG EC 516 Digital Signal Processing
ENG EC 522 Intro to Computational Imaging
ENG EC 526 Parallel Algorithm for High Perf Computing
ENG EC 481 Nanomaterials & Nanotechnology
ENG ME 302 Engineering Mechanics II
ENG ME 305 Mechanics of Materials
ENG ME 309 Structural Materials
ENG ME 419 Heat Transfer
ENG ME 441 Mechanical Vibrations
ENG ME 503 Kinetic Processes in Materials
ENG ME 555 MEMS: Fabrication & Materials
ENG ME 571 Medical Robotics

ENGINEERING ELECTIVES

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

- ENG EC 503 Kinetic Processes in Materials
- ENG EC 571 Medical Robotics
- ENG EC 555 MEMS: Fabrication & Materials
- ENG ME 403, ENG ME 404, ENG EC 402, ENG BE 404
- ENG ME 406, ENG EC 402
- ENG ME 403, ENG EC 401
- ENG EC 311 Intro to Electronics
- ENG EC 314 Intro Software Engineering
- ENG EC 401
- ENG EC 402
- ENG EC 327 Intro to Digital Design
- ENG EC 516 Digital Signal Processing
- ENG EC 522 Intro to Computational Imaging
- ENG EC 526 Parallel Algorithm for High Perf Computing
- ENG EC 481 Nanomaterials & Nanotechnology
- ENG ME 302 Engineering Mechanics II
- ENG ME 305 Mechanics of Materials
- ENG ME 309 Structural Materials
- ENG ME 419 Heat Transfer
- ENG ME 441 Mechanical Vibrations
- ENG ME 503 Kinetic Processes in Materials
- ENG ME 555 MEMS: Fabrication & Materials
- ENG ME 571 Medical Robotics

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 BE 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>Q1</th>
<th>WRI</th>
<th>WIN</th>
<th>RIL</th>
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<tbody>
<tr>
<td>Quantitative Reasoning 1</td>
<td>Writing, Research &amp; Inquiry</td>
<td>Writing-Intensive Course</td>
<td>Research and Information Literacy</td>
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<tr>
<td>Q2</td>
<td>WIN</td>
<td>TWC</td>
<td>CRT</td>
</tr>
<tr>
<td>Quantitative Reasoning 2</td>
<td>Writing-Intensive Course</td>
<td>Teamwork/Collaboration</td>
<td>Critical Thinking</td>
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<tr>
<td>S1</td>
<td>OSC</td>
<td>DME</td>
<td>CRI</td>
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<tr>
<td>Scientific Reasoning 1</td>
<td>Oral and/or Signed Communication</td>
<td>Digital/Multimedia Expression</td>
<td>Creativity/Innovation</td>
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<tr>
<td>S2</td>
<td>DME</td>
<td>CRT</td>
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<tr>
<td>Scientific Reasoning 2</td>
<td>Digital/Multimedia Expression</td>
<td>Critical Thinking</td>
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<td>FYW</td>
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<tr>
<td>First-Year Writing Seminar</td>
<td>Critical Thinking</td>
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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

5/19/2022