NAME: ________________________________  U.I.D. # U  DATE: ________________

**Biomedical Engineering – 2017**  
Undergraduate Program Planning Sheet

### Core Courses

**Freshman 1**
- CAS MA 123 Calculus I (4)
- ENG EK 100 Freshman Seminar (0)
- CAS CH 101 General Chemistry I (4)
- Either Semester

**Freshman 2**
- CAS MA 124 Calculus II (4)
- CAS PY 211 Physics I (4)
- CAS CH 102 General Chemistry II (4)
- Either Semester

**Sophomore 1**
- CAS MA 225 Multivariate Calculus (4)
- CAS PY 212 Physics II (4)
- ENG EK 307 Electric Circuits (4)
- Either Semester

**Sophomore 2**
- CAS MA 226 Differential Equations (4)
- ENG EK 209 Principles of Molecular Cell Biology & Biotechnology (4)
- ENG EK 301 Engineering Mechanics I (4)
- Either Semester *

**Junior 1**
- ENG EK 424 Thermodynamics & Statistical Methods (4)
- CAS BI 315 Systems Physiology (4)
- ENG BE 492 Biomed Measurements II (2) [Spring Only]
- Engineering Elective (4)

**Junior 2**
- Biomedical Elective (4)
- Fields Elective ENG – BE 419, BE 420, BE 435, or BE 436 (4)
- ENG BE 491 Biomed Measurements I (2) [Fall Only]
- Eng BE 420 Control Systems in Biomedical Engineering (4) [Spring Only]

**Senior 1**
- Engineering Elective (4)
- Professional Elective (4)
- ENG BE 467 Product Design/Innovation (2) [Fall Only]
- ENG BE 465 Senior Project (2)

**Senior 2**
- Biomedical Elective (4)
- Biomedical Elective (4)
- Professional Elective (4)
- ENG BE 466 Senior Project (4)

### Extra Courses

( ) ( ) ( ) ( )

### General Education Requirements

**Checklist**
- 1. CAS WR 100
- 2. CAS WR 150
- 3. 1 Course in Social Science
- 4. 1 Course in Humanities
- 5. 1 Course SS or HUM
- 6. 1 Course General Education Elective
- 7. Total of at least 24 credits

**Prereq. = Coreq. =** ... 

### Notes

- **Graduation Requirement**: 136 credits
- **ENG Credit Req.**: 48 credits/Upper Division Program courses completed at Boston University
- **Design Req.**: 4 credits from the design Elective list must be taken to fulfill a professional, engineering, or biomedical elective
- **Pre-Med Majors**: Students should consult with the BU Pre-Professional Advising Office and their ENG Faculty Advisors

* STUDY ABROAD: Students who plan to study abroad in Sophomore 2 should take EK 301 in Sophomore 1
REQUIREMENTS

Students majoring in Biomedical Engineering are required to complete a minimum of 136 credits as detailed on the Program Planning Sheet on the other side of this form.

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

CONTINUOUS AND FIELDS IN BIOMEDICAL SYSTEMS ELECTIVE (4 credits required)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG BE 419 Principles of Continuum Mechanics and Transport</td>
<td>ENG BE 435 Transport Phenomena in Living Systems</td>
</tr>
<tr>
<td>ENG BE 420 Introduction to Solid Biomechanics</td>
<td>ENG BE 436 Fundamentals of Fluid Mechanics</td>
</tr>
</tbody>
</table>

PROFESSIONAL ELECTIVES (8 credits required)

All ENG BE, EC, EK, and ME 300, 400, and 500 level courses are suitable as a professional elective

[Exceptions due to overlap of material **: BE 500, EC 381, EC 402, EK 500, ME 308, ME 403, ME 404, ME 501]

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, 391, 392)

- ENG BF 527 Applications in Bioinformatics
- ENG EK 156 Design & Manufacture
- ENG EK 210 – Intro ENG Design

ENGINEERING ELECTIVES (4 credits required)

- ENG EC 311 Intro to Logic Design
- ENG EC 327 Intro Software Engineering
- ENG EC 412 Analog Electronics
- ENG EC 415 Communications Systems
- ENG EC 416 Intro Digital Signal Processing
- ENG EC 450 Microprocessors
- ENG EC 455 Electromagnetic Systems I
- ENG EC 456 Electromagnetic Systems II

- ENG ME 305 Mechanics of Materials
- ENG ME 309 Structural Mechanics
- ENG ME 407** Computer-Aided Design & Manufacture
- ENG ME 407** - Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 419 Heat Transfer
- ENG ME 428 – Device Diagnostics & Design
- ENG ME 437 Nanometer Scale Processes
- ENG ME 503 Numerical Meth/Mod in BME
- ENG ME 511 Intro Biomed Instrumentation
- ENG ME 555 MEMS: Fabrication & Materials
- ENG ME 560 Modern Active Circuit Design
- ENG ME 570 Modern Active Circuit Design
- ENG ME 701 Modern Active Circuit Design
- ENG ME 705 Modern Active Circuit Design

- ENG BF 527 Application in Bioinformatics
- ENG EC 410 Introduction to Electronics
- ENG EC 471 Physics Semiconductor Devices
- ENG EC 505 Stochastic Processes
- ENG EC 580 Modern Active Circuit Design
- ENG EC 601 Nanomaterials & Nanotechnology
- ENG ME 302 Engineering Mechanics II
- ENG ME 306 Modern Biomechanics
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 503 Numerical Meth/Mod in BME
- ENG ME 555 MEMS: Fabrication & Materials
- ENG ME 560 Modern Active Circuit Design
- ENG ME 570 Modern Active Circuit Design
- ENG ME 701 Modern Active Circuit Design
- ENG ME 705 Modern Active Circuit Design

- ENG BF 527 Application in Bioinformatics
- ENG EC 410 Introduction to Electronics
- ENG EC 471 Physics Semiconductor Devices
- ENG EC 505 Stochastic Processes
- ENG EC 601 Nanomaterials & Nanotechnology
- ENG ME 302 Engineering Mechanics II
- ENG ME 306 Modern Biomechanics
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 407** – Computer-Aided Design & Manufacture
- ENG ME 503 Numerical Meth/Mod in BME
- ENG ME 555 MEMS: Fabrication & Materials
- ENG ME 560 Modern Active Circuit Design
- ENG ME 570 Modern Active Circuit Design
- ENG ME 701 Modern Active Circuit Design
- ENG ME 705 Modern Active Circuit Design

BIOMEDICAL ENGINEERING ELECTIVES (12 credits required)

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

ENG EC 410 Introduction to Electronics, ENG BF 527 Application in Bioinformatics,

DESIGN ELECTIVES (4 credits required) One of the elective choices above (Prof, ENG or BME) must include one 4-credit or two 2-credit courses from the design electives list.

<table>
<thead>
<tr>
<th>Fulfills Professional Elective:</th>
<th>Fulfills Engineering Elective:</th>
<th>Fulfills Biomedical Elective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG EK 156 - Design and Manufacture (2 cr)</td>
<td>ENG EC 311 - Introduction to Logic Design</td>
<td>ENG ME 407** – Computer-Aided Design &amp; Manufacture</td>
</tr>
<tr>
<td>ENG EK 210 – Intro ENG Design (2 cr)</td>
<td>ENG EC 412 Analog Electronics</td>
<td>ENG ME 511 Intro Biomed Instrumentation</td>
</tr>
<tr>
<td>ENG ME 359 – CAD/ Machine Components (2 cr)</td>
<td>ENG ME 419 Heat Transfer</td>
<td>ENG EC 410 Introduction to Electronics</td>
</tr>
<tr>
<td>ENG ME 360 – Product Design</td>
<td>ENG ME 437 Nanometer Scale Processes</td>
<td></td>
</tr>
<tr>
<td>Fulfills Fields Elective</td>
<td>ENG ME 503 Numerical Meth/Mod in BME</td>
<td></td>
</tr>
<tr>
<td>ENG BE 435 – Transport Phenomena</td>
<td>ENG ME 555 MEMS: Fabrication &amp; Materials</td>
<td></td>
</tr>
</tbody>
</table>

DEGREE ENHANCEMENTS

CONCENTRATIONS: Students may choose to add a Concentration in Energy Technologies, Nanotechnology or Technology Innovation. Students completing a Minor in Mechanical Engineering may choose to add a concentration in Aerospace Engineering. A concentration requires 4 courses which satisfy courses within the major. Hence, a concentration can usually be completed without additional coursework. More information on concentrations and the specific requirements for each can be found at: http://www.bu.edu/eng/academics/programs/concentrations/. Students may also pursue minors in other Colleges at Boston University. For more information, please contact the College of the minor.

MINORS: Students may choose to add a minor in any one of the other degree programs or divisions (Materials Science & Engineering or Systems Engineering) within the College of Engineering A minor consists of 5 courses, 2 of which may also be used to satisfy requirements for the major. Completing a Minor will add a minimum of 12 credits to the total credits for the degree. More information on minors and the specific requirements for each can be found at: http://www.bu.edu/eng/academics/programs/minors/.

DOUBLE MAJORS: Students may earn two engineering BS degrees. Double majors require a minimum of 168 credits and students must fulfill the requirements for each of the degree programs. See http://www.bu.edu/eng/academics/special-programs/ for more details.

OTHER WAYS TO ENHANCE YOUR DEGREE

Students have several additional options available to them including study abroad, research, and co-op/ internship opportunities. For more information on these programs, please visit the College of Engineering Undergraduate website: http://www.bu.edu/eng/academics/.

Notes: For the following 9 sets of courses, only 1 course can be taken for credit in each set due to the overlap of material:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG ME 305, ENG BE 20</td>
<td>ENG EC 471 Physics Semiconductor Devices</td>
</tr>
<tr>
<td>ENG ME 305, ENG BE 20</td>
<td>ENG ME 407** Computer-Aided Design &amp; Manufacture</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG EC 505 Stochastic Processes</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG EC 580 Modern Active Circuit Design</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG EC 580 Modern Active Circuit Design</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG ME 407** – Computer-Aided Design &amp; Manufacture</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG ME 407** – Computer-Aided Design &amp; Manufacture</td>
</tr>
<tr>
<td>ENG ME 360, ENG BE 302, ENG EC 402</td>
<td>ENG ME 407** – Computer-Aided Design &amp; Manufacture</td>
</tr>
</tbody>
</table>

** Summer only