**Computation & Systems Biology Track**

**Curriculum Map**

<table>
<thead>
<tr>
<th>Fall Year 1 (16 hrs)</th>
<th>Spring Year 1 (16 hrs)</th>
<th>Fall Year 2 (18 hrs)</th>
<th>Spring Year 2 (18 hrs)</th>
<th>Fall Year 3 (18 hrs)</th>
<th>Spring Year 3 (17 hrs)</th>
<th>Fall Year 4 (14/17 hrs)</th>
<th>Spring Year 4 (17 hrs)</th>
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<tbody>
<tr>
<td>ENG 100 (0) Engineering Lecture</td>
<td>PHYS 211 (4) Univ. Physics, Mechanics</td>
<td>PHYS 212 (4) Univ. Physics, Elec &amp; Mag</td>
<td>BIOE 205 (3) Systems in Bioengineering</td>
<td>BIOE 202 (3) Bioenergetics</td>
<td>BIOE 220 (3) Transport &amp; Flow in Bioengineering</td>
<td>BIOE 420 (3) Intro. Bio. Control Systems</td>
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<td>BIOE 199/100 (1) Undergraduate Seminar</td>
<td>BIOE 120 (1) Introduction to Bioengineering</td>
<td>BIOE 201 (3) Conservation Principles BIOE</td>
<td>BIOE 210 (3) Linear Algebra for Biomedical Data Science</td>
<td>BIOE 302 (3) Modeling Human Physiology</td>
<td>BIOE 414 (3) Biomedical Instrumentation</td>
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<td>RHET 105 (4) Principles of Composition</td>
<td>MCB 150 (4) Molec&amp;Cellular Basis of Life</td>
<td>BIOE 206 (3) Cellular Bioengineering</td>
<td>BIOE 202 (2) Cell &amp; Tissue Engineering Lab</td>
<td>BIOE 303 (2) Quant Human Physiology Lab</td>
<td>BIOE 415 (2) Biomedical Instrumentation Lab</td>
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<tr>
<td>CHEM 102 (3) General Chemistry I</td>
<td>CHEM 104 (3) General Chemistry II</td>
<td>CS 125 (4) Intro. to Comp ** Instead of CS 101**</td>
<td>CHEM 232 (4) Organic Chemistry I</td>
<td>CS 225 Data Structures (4)</td>
<td>Free Elective (3)</td>
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<td>BIOE 198 (2) Biomedical Data Analysis</td>
<td>BIOE 200 (1) BIOE Career Immersion</td>
<td>CS 173 (3) Discrete Structures (prereq required for CS 225)</td>
<td>Free Elective (3)</td>
<td>Track Elec (3)</td>
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<td>CHEM 103 (1) General Chem Lab I</td>
<td>CHEM 105 (1) General Chem Lab II</td>
<td>BIOE 298 AMS (1) Career Ecosystems</td>
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<td>SS/Hum (3)</td>
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**Computation & Systems Biology Track Electives:**

- BIOE 424 – Systems Bioengineering (3 hr)
- BIOE 430 – Intro. Synthetic Biology (3 hr)
- BIOE 498 JI – Finite Element Mthds in Biomed (3 hr)
- ABE 440 – Applied Statistical Methods I (4 hr)
- ECE 490 – Introduction to Optimization (3 hr)
- SE 423 – Mechatronics (3 hr)
- IE 310 – Deterministic Models in Optimization (3 hr)
- IE 370 – Stochastic Processes and Applications (3 hr)
- Other 400 level CS or Systems course (3 or 4 hr) – with advisor approval.

**Note – not taking courses as advised may result in a delayed graduation date. Students are responsible for any impact resulting from not following departmental advising.**

**Courses with dashed line borders are not currently required as part of the Core BIOE Curriculum**

**TMGT 461 Sections TMD/TME –**
- Tech, Eng, and Mgmt Final Project (4 hr)
- CS 225 – Data Structures (4 hr)
- CS 398 DL – Deep Learning (3 hr)
- CS 411 – Database Systems (3 hr)
- CS 412 – Introduction to Data Mining (3 hr)
- CS 440 – Artificial Intelligence (3 hr)
- CS 465 – User Interface Design (3 hr)
- CS 466 – Introduction to Bioinformatics (3 hr)
- NPRE 498 PRA – Advanced Risk Analysis (3 hr)

**If outlined in RED then the BIOE course is offered both Fall & Spring Semesters**
## Other Requirements

### General Education Requirements
- 6 hours in Humanities
- 6 hours in Social/Behavioral Sciences
- 6 hours in Liberal Education
- 1 Advanced Composition Course
- 1 Western Comparative Cultures Course
- 1 Non-Western Comparative Cultures Course
- 1 US Minority Cultures Course (FA 2018 admits and beyond only)
- 3rd Level of a Foreign Language

### Premed Requirements
- Meet with Engineering Career Services Premed advisor
- Common Courses *(additional requirements may apply depending on school)*:
  - MCB 450/354 (BioChem)
  - CHEM 233 (Orgo 1 lab)
  - Social/Behavioral Science Sequence (3 courses)