## Computation & Systems Biology Track
### Curriculum Map

### Fall Year 1 (16 hrs)
- MATH 221 (4) Calculus I
- ENG 100 (0) Engineering Lecture
- BIOE 199/100 (1) Undergraduate Seminar
- RHET 105 (4) Principles of Composition
- CHEM 102 (3) General Chemistry I
- CHEM 103 (1) General Chem Lab I
- SS/Hum (3)

### Spring Year 1 (16 hrs)
- MATH 231 (3) Calculus II
- PHYS 211 (4) Univ. Physics, Mechanics
- BIOE 120 (1) Introduction to Bioengineering
- MCB 150 (4) Molec&Cellular Basis of Life
- CHEM 104 (3) General Chemistry II
- C
- CHEM 105 (1) General Chem Lab II

### Fall Year 2 (18 hrs)
- MATH 241 (4) Calculus III
- PHYS 212 (4) Univ. Physics, Elec & Mag
- BIOE 201 (3) Conservation Principles BIOE
- BIO 206 (3) Cellular Bioengineering
- CHEM 105 (1) General Chem Lab II
- C
- CHEM 203 (4) Organic Chemistry I

### Spring Year 2 (15 hrs)
- BIOE 205 (3) Systems in Bioengineering
- BIOE 201 (3) Conservation Principles BIOE
- CS 125 (4) Intro. to Comp ** Instead of CS 101**
- CS 173 (3) (as free elective)
- BIOE 202 (2) Cell & Tissue Engineering Lab
- CHEM 232 (4)

### Fall Year 3 (15 hrs)
- BIOE 476 (3) Tissue Engineering
- BIOE 220 (3) Bioenergetics
- BIOE 202 (2) Cell & Tissue Engineering Lab
- BIOE 208 (3) Introduction to Computational Biology
- BIOE 206 (3) Cellular Bioengineering
- CS 225 Data Structures (4)

### Spring Year 3 (17 hrs)
- BIOE 310 (3) Comp. Tools for Bio. Data
- BIOE 302 (3) Modeling Human Physiology
- BIOE 435 (2) Sr. Design I
- BIOE 360 (3) Transport & Flow in Bioengineering
- BIOE 436 (2) Sr. Design II
- BIOE 414 (3) Biomedical Instrumentation
- BIOE 415 (2) Biomedical Instrumentation Lab

### Fall Year 4 (14/17 hrs)
- BIOE 435 (2) Sr. Design I
- BIOE 436 (2) Sr. Design II
- BIOE 420 (3) Intro. Bio. Control Systems

### Spring Year 4 (14 hrs)
- BIOE 420 (3) Intro. Bio. Control Systems
- Track Elec (3)
- SS/Hum (3)
- SS/Hum (3)

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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.**

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

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**Courses with dashed line borders are not currently required as part of the Core BIOE Curriculum; updated 1/31/2019**
## 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)