2019-2020 Biomolecular Engineering and Bioinformatics: Biomolecular DRAFT

**Math and Statistics**
- **MATH 19A** (or **MATH 20A**)
  - Calculus I
- **MATH 19B** (or **MATH 20B**)
  - Calculus II
- **STAT 131**
  - Intro to Probability Theory
- **STAT 132**
  - Statistical Inference

**Chemistry**
- **CHEM 1A**
  - General Chemistry
- **CHEM 1B/M**
  - (7 units)
  - General Chemistry/Lab
- **CHEM 1C/N**
  - (7 units)
  - General Chemistry/Lab
- **CHEM 8A**
  - Organic Chemistry
- **CHEM 8B**
  - Organic Chemistry

**Laboratory Courses**
- (Strongly Recommended)
  - **BME 21L**
    - Introduction to Basic Laboratory Techniques
  - OR
  - **BIOL 20L**
    - Experimental Biology Laboratory
- (Strongly Recommended)
  - **BME 22L**
    - Foundations of Design and Experimentation in Molecular Biology, Part 1
  - OR
  - **CHEM 8L**
    - Organic Chemistry Laboratory
- AND
  - (Strongly Recommended)
    - **BME 23L**
      - Foundations of Design and Experimentation in Molecular Biology, Part II
    - OR
    - **CHEM 8M**
      - Organic Chemistry Laboratory

**Humanities**
- **BME 80G**
  - Bioethics
- **BME 185**
  - (Recommended)
  - Technical Writing for Biomolecular Engineers
  - OR
  - **CSE 185E**
    - Technical Writing for Computer Engineers

**Physics and Electronics**
- **PHYS 5A/L**
  - (6 units)
  - Intro to Physics/Lab
- **BME 51A**
  - Applied Electronics I
- **BME 51B**
  - Applied Electronics II

**Bioinformatics**
- **BME 110**
  - Computational Biology Tools
- **BME 160**
  - Research Programming/Lab
- **BME 163**
  - Applied Visualization and Analysis

**Design Elective**
- BME 128 or BME 140 or BME 177
  - One course cannot be used to satisfy both the Elective and Design Elective.

**Elective**
- BME 128 or BME 140 or BME 177
- BIOL 115, METX 119, BIOC 100C, BME 122H, BME 128, BME 128L, BME 130, BME 132, BME 140, BME 177, BME 178, or 5-unit BME grad course (e.g. BME 230B)$

**Humanities**
- **BME 80G**
  - Bioethics
- **BME 185**
  - (Recommended)
  - Technical Writing for Biomolecular Engineers
  - OR
  - **CSE 185E**
    - Technical Writing for Computer Engineers

**Biochemistry**
- **BIOC 100A**
  - Biochemistry & Molecular Biology
- **BIOC 100B**
  - Biochemistry & Molecular Biology

**Biomolecular Capstone**

*Students must complete one of the following:*

**Bioinformatics Capstone**
- **BME 205**
  - Bioinformatics Models and Algorithms
- **BME 230A**
  - Introduction to Computational Genomics and Systems Biology

**iGEM**
- **BME 180**
  - (2 units)
  - Professional Practice in Bioengineering
- **BME 188A**
  - Synthetic Biology Research A
- **BME 188B**
  - Synthetic Biology Research B

**Senior design**
- **BME 129A**
  - Bioengineering Project I
- **BME 129B**
  - Bioengineering Project II
- **BME 129C**
  - Bioengineering Project III

**Senior thesis**
- **BME 195**
  - Senior Thesis
- **BME 123T**
  - Thesis Presentation
- **BME 195F**
  - Senior Thesis
- **BME 195**
  - Senior Thesis
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$ Not including BME 205 or BME 230A if using Bioinformatics capstone

# Please note that BME 205 has prerequisites not required by the Biomolecular Concentration

Ψ Students may petition to substitute STAT 206 for STAT 132.

Ω CSE 20 Beginning Programming in Python is recommended before BME 160 for students who have never programmed.

α The thesis option consists of 12 credits of Independent Study (BME 198), Field Study (BME 193), or Senior Thesis Research (BME 195) in biomolecular engineering; and BME 123T Senior Thesis Presentation, 5 credits. Students pursuing the senior thesis option must write a two-page thesis proposal and seek approval of their project from the undergraduate director in the quarter preceding the independent study courses, typically spring quarter of the third year.

Student Name:

Staff Advisor Signature: