2022 – 2023 Biomolecular Engineering and Bioinformatics: Bioinformatics

Math & Statistics

•MATH 3 or math placement of 400 or higher
MATH 19A
Calculus I
[F/W/Sp/Su]

•MATH 19A or MATH 20A
MATH 19B
Calculus II
[F/W/Sp/Su]

•MATH 3 or math placement of 400 or higher
AM 10
Mathematical Methods for Engineers I
[F/W/Sp]

•MATH 19A, prior programming recommended
CSE 16
Discrete Math
[F/W/Sp]

•MATH 19B or MATH 20B
STAT 131
Intro to Probability Theory
[F/W/Sp/Su]

•STAT 131
STAT 132
Classical and Bayesian Inference
[W/Sp]
OR
•STAT 131 and permission from instructor
STAT 206
Applied Bayesian Statistics
[W]

Chemistry & Biochemistry

•MATH 3 or AM 3 or math placement of 300 or higher
CHEM 1A
General Chemistry
[F/W/Sp/Su]

CHEM 1B/M
General Chemistry/Lab
[F/W/Sp/Su]

•CHEM 1A
CHEM 1C/N
General Chemistry/Lab
[F/W/Sp/Su]

•CHEM 1B and 1C
CHEM 8A
Organic Chemistry
[F/W/Su]

•CHEM 8A
CHEM 8B
Organic Chemistry
[W/Sp/Su]

•CHEM 8B and BIOL 20A
BIOC 100A
Biochemistry and Molecular Biology
[F]

Biology

•CHEM 1A
BIOL 20A
Cell and Molecular Biology
[F/W/Sp/Su]

•BIOL 20A
BME 105
(Strongly Recommended)
Genetics in the Genomics Era
[Sp]
OR
•BIOL 20A and BIOE 20B
BIOL 105
Genetics
[F/W/Sp/Su]

Humanities

BME 80G
Bioethics in the 21st Century: Science, Business, and Society
[Sp]

•ELWR and BIOL 20A
BME 185
Technical Writing for Biomolecular Engineers
[F]
OR
•ELWR and CSE 12 or CSE 15 or CSE 30 or BME 160
CSE 185E
(Recommended)
Technical Writing for Computer Engineers
[F/W/Sp]

Modeling & Design

Choose one of the following sequences

•Math 19B and AM 10
AM 20
Mathematical Methods for Engineers II
[W/Sp]
&
•STAT 131 and AM 20
AM 115
Stochastic Modeling in Biology
[Sp]

•Math 19B or MATH 20B; and AM 10
AM 30
Multivariate Calculus for Engineers
[F/Sp]
&
•CSE 101 and AM 30 and Stat 131
CSE 142
Machine Learning
[F/Sp]

•Math 19B and AM 10
AM 30
Multivariate Calculus for Engineers
[F/Sp]
&
•CSE 101
CSE 144
Applied Machine Learning
[F/W/Sp]

Programming

•BIOL 20A
BME 160 (6 units)Ω
Research Programming in the Life Sciences
[W/Sp]

•CSE 20 or BME 160; and Math 3 or Math 19A
CSE 30 (7 units)
Programming Abstractions: Python
[F/W/Sp]

•CSE 12 or BME 160 and 13S and CSE 16 and CSE 30 and Math 19B
CSE 101
Introduction to Data Structures and Algorithms
[F/W/Sp]

•BME 160 or BME 205
BME 163 (3 units)
Applied Visualization and Analysis of Scientific Data
[Sp]

•CSE 12 or BME 160
CSE 13S (7 units)
Computer Systems and C Programming
[F/W/Sp]

•CSE 13S
CSE 182+
Introduction to Database Management Systems
[Sp]

Bioinformatics & Elective

•BME 105 or BIOL 105 or BIOC 100A or declared BINF major
BME 110
Computational Biology Tools
[F/WSp]

Elective

Course used as an Elective cannot be used to satisfy other major requirements
AM 147, BME 122H, BME 128, BME 128L, BME 130, BME 132, BME 140, BME 175, BME 177, BME 178, BIOC 100B, CSE 142, CSE 144, METX 119, METX 140 or 5-unit BME grad course

Bioinformatics Capstone

•BME 160, and STAT 131 and previous or concurrent enrollment in BIOC 100A
BME 205
Bioinformatics Models and Algorithms
[F]

•BME 205
BME 230A
Introduction to Computational Genomics and Systems Biology
[W]

Exit Requirements

Requirements must be completed by the end of a student's final quarter.

1. Portfolio
2. Exit Survey
3. Exit Interview

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Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Legend

• Denotes Prerequisite

+ Students may take CSE 180 in place of CSE 182; however, BMEB: Bioinformatics students do not have registration priority

Ω Students with no prior programming experience are advised to take CSE 20 prior to BME 160

Student name:

Staff advisor signature: