

2024 – 2025 Biomolecular Engineering and Bioinformatics: Bioinformatics

Math & Statistics

- MATH 3 or math placement of 400 or higher
MATH 19A
Calculus I [F/W/Sp]
- MATH 19A
MATH 19B
Calculus II [F/W/Sp]
- MATH 3 or math placement of 400 or higher
AM 10*
Mathematical Methods for Engineers I [F/W/Sp]
- MATH 19A, or Math 19B; prior programming recommended
CSE 16
Discrete Math [F/W/Sp]
- MATH 19B
STAT 131
Intro to Probability Theory [F/W/Sp]
- STAT 131
STAT 132
Classical and Bayesian Inference [F/W/Sp]
OR
•STAT 131 and permission from instructor
STAT 206
Applied Bayesian Statistics [not offered 24-25]

Chemistry

Select one of the following General Chemistry series

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| •Math 2 or math placement of 200 or higher CHEM 3A General Chemistry [F/W] | •Chem 3A CHEM 3B/BL General Chemistry [W/Sp] | •Chem 3B CHEM 3C/CL General Chemistry [F/Sp] |
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OR

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| •Chem 4 Prep ALEKS module. Math 3 or math placement score of 300 or higher. CHEM 4A/AL Advanced General Chemistry | •Chem 4A CHEM 4B/BL Advanced General Chemistry |
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CHEM 4A/AL and 4B/BL not offered 2024-2025

Biology, Organic Chemistry, and Biochemistry

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| •CHEM 3A, or CHEM 4A BIOL 20A Cell and Molecular Biology [F/W/Sp] | •CHEM 3C or CHEM 4B CHEM 8A Organic Chemistry [F/W] |
| •BIOL 20A BME 105 (Strongly Recommended) Genetics in the Genomics Era [Sp] | •CHEM 8A CHEM 8B Organic Chemistry [W/Sp] |
| OR | •CHEM 8B and BIOL 20A BIOC 100A Biochemistry and Molecular Biology [F] |
| •BIOL 20A and BIOE 20B BIOL 105 Genetics [F/W/Sp] | |

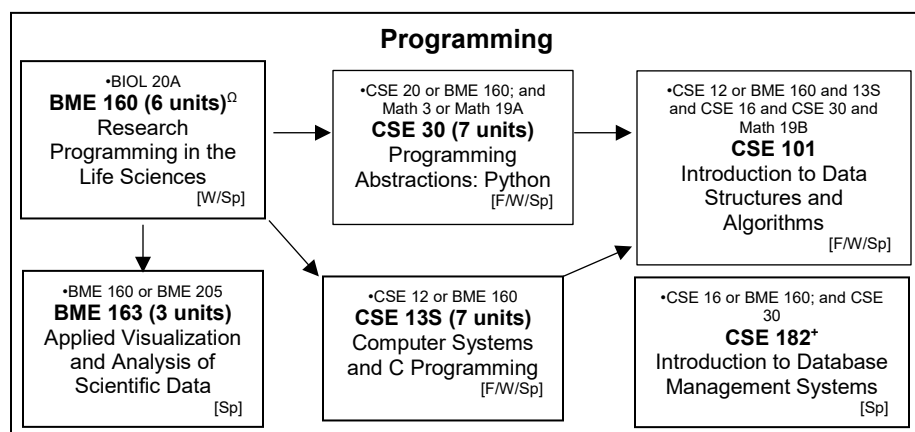
Modeling & Design

Choose one of the following sequences

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| •Math 19B and AM 10 AM 20* Math Methods for Engineers II [F/W/Sp] | & | •STAT 131 and AM 20 AM 115 Stochastic Modeling in Biology [Not offered 24-25] |
| •Math 19B and AM 10 AM 30* Multivariate Calculus for Engineers [F/Sp] | & | •CSE 40 or Stat 132, CSE 101, AM 30, and Stat 131 CSE 142 Machine Learning [Sp] |
| •Math 19B and AM 10 AM 30* Multivariate Calculus for Engineers [F/Sp] | & | •CSE 40 or Stat 132; and CSE 101 CSE 144 Applied Machine Learning [F/W] |

Humanities

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| BME 80G Bioethics in the 21 st Century: Science, Business, and Society [Sp] |
| •ELWR and BIOL 20A BME 185 Technical Writing for Biomolecular Engineers [F/W/Sp] OR •ELWR and CSE 12 or CSE 15 or CSE 30 or BME 160 CSE 185E Technical Writing for Computer Engineers [F/W/Sp] |



Bioinformatics & Elective

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| •BME 105 or BIOL 105 or BIOC 100A or declared BMEB major BME 110 Computational Biology Tools [F/W/Sp] |
| Elective <i>One of the following (course used as an Elective cannot be used to satisfy other major requirements):</i> AM 147, BME 118, BME 122H, BME 128, BME 128L, BME 130, BME 132, BME 140, BME 175, BME 177, BME 177L, BME 178, BIOC 100B, CSE 142, CSE 144, METX 100, METX 140, or 5-unit BME grad course |

Bioinformatics Capstone

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| •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] |
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| Fall _____ | Winter _____ | Spring _____ | Summer _____ |
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| Fall _____ | Winter _____ | Spring _____ | Summer _____ |
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| Fall _____ | Winter _____ | Spring _____ | Summer _____ |
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| Fall _____ | Winter _____ | Spring _____ | Summer _____ |
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Legend

• Denotes prerequisites as listed in the UCSC general catalog as of August 15, 2024. Prerequisites listed on the chart are subject to change and students should refer to the catalog for the most up to date requirements.

+ 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

^ Students may petition to substitute Math 21 for AM 10, Math 24 for AM 20, or Math 23A for AM 30 if they can show MATLAB proficiency at the level of students in the AM classes they are replacing. Matlab Training: <https://its.ucsc.edu/software/matlab.html>

Due to course overlap between the biomolecular engineering and bioinformatics (BMEB) B.S., and the bioinformatics minor, none of these double major or major/minor combinations will be considered. Other major/minor combinations are permitted and encouraged. Double majors with the biotechnology B.A. and majors in the Humanities, Social Sciences, and Arts Divisions are specifically encouraged.

Exit Requirements

Students are required to submit a portfolio, exit survey, and attend an exit interview. The portfolios must be turned in by the last day of the quarter of graduation, and will be reviewed quarterly by the undergraduate director. Exit interviews are scheduled during the last week of the quarter by Baskin Engineering advising office, generally as small group interviews. Additional information can be found in the program catalog statement.

1. Portfolio
2. Exit Survey
3. Exit Interview