

# Bioelectronics & Biophotonics Minor 2024-2025 Curriculum Chart

## Mathematics & Statistics

<p style="text-align: center;"><b>MATH 19A</b> Calculus I Prerequisites: Math Placement score of 400 or more, or Math 3</p>	OR	<p style="text-align: center;"><b>AM 10</b> Math Methods for Engineers I Prerequisites: Math Placement score of 400 or more, or Math 3</p>	<p style="text-align: center;"><b>MATH 21</b> Linear Algebra Prerequisites: Math 19A</p>
<p style="text-align: center;"><b>MATH 19B</b> Calculus II Prerequisites: Math 19A or 20A</p>	OR	<p style="text-align: center;"><b>AM 20</b> Math Methods for Engineers II Prerequisites: Math 19B, and AM 10 or Math 21</p>	<p style="text-align: center;"><b>MATH 24</b> Ordinary Differential Equations Prerequisites: Math 22 or 23A</p>

## Physics

<p style="text-align: center;"><b>PHYS 5A/L</b> Intro to Physics I/Lab Prerequisites: Math 19A or 20A Previous or concurrent enrollment in Math 19B or 20B required</p>
<p style="text-align: center;"><b>PHYS 5C/N</b> Intro to Physics III/Lab Prerequisites: PHYS 5A and Math 19B or 20B</p>

## Computer Engineering

<p style="text-align: center;"><b>CSE 12(7 units)</b> Computer Systems &amp; Assembly Language/Lab [Prerequisite(s): CSE 20, or CSE 30, or BME 160]</p>	<p style="text-align: center;"><b>ECE 13 (7 units)</b> Computer Systems &amp; C Programming Prerequisites: CSE 12</p>	<p style="text-align: center;"><b>CSE 100/L</b> Logic Design/Lab Prerequisites: CSE 12 Requires declared major status in CE, EE, or RE</p>
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## Biology & Biotechnology

*(Complete one )*

<p style="text-align: center;"><b>BME 140</b> Bioinstrumentation Prerequisites: BME 5; ECE 101/L; or BIOL 100; or BIOC 100A</p>
<p style="text-align: center;"><b>ECE 104</b> Bioelectronics Restricted to juniors and seniors</p>
<p style="text-align: center;"><b>ECE 130/L</b> Introduction to Optoelectronics and Photonics/Lab Prerequisites: Phys 5B and 5C, or Phys 6B and 6C</p>

## Electronics

<p style="text-align: center;"><b>ECE 101/L</b> Intro to Electronic Circuits/Lab Prerequisites: PHYS 5C/N and Math 24 or PHYS 116A, or Previous or concurrent enrollment in AM 20</p>	<p style="text-align: center;"><b>ECE 121(7 units)</b> Microcontroller System Design Prerequisites: CSE 12 and ECE 13 and Previous or concurrent enrollment in ECE 101/L</p>
<p style="text-align: center;"><b>ECE 103</b> Signals &amp; Systems Prerequisites: ECE 101/L and AM 20 or Math 24</p>	<p style="text-align: center;"><b>ECE 167(7 units)</b> Sensing &amp; Sensor Technologies/Lab Prerequisites: ECE 13, and ECE 103/L</p>

# Bioelectronics & Biophotonics Minor 2024-2025 Curriculum Chart

\*This minor cannot be combined with the Bioelectronics concentration of the former Bioengineering major, the EE BS, or the EE minor\*

Fall _____	Winter _____	Spring _____	Summer _____
Fall _____	Winter _____	Spring _____	Summer _____
Fall _____	Winter _____	Spring _____	Summer _____
Fall _____	Winter _____	Spring _____	Summer _____

The bioelectronics and biophotonics minor is designed for students in chemical, biological, environmental sciences, and biomolecular engineering to learn how to interface biological systems with electronics including sensors, actuators, and wireless communications. Introductory chemistry and physiology is desired, but not required.

Essential courses for the minor in bioelectronics and biophotonics deal with the analog electronics to interface biological systems to sensors and with the signals they produce, both analog and digital, for interfacing to computer systems. The minor requirements may satisfy the requirements of other majors or minors. The minor cannot be combined with the bioelectronics concentration of the former bioengineering major or the electrical engineering B.S. or electrical engineering minor.

**Note:**  
The prerequisites listed on this curriculum chart are accurate as of August 15, 2024 according to UCSC's general catalog. Prerequisites listed on this chart are subject to change and students should refer to the catalog for the most up to date requirements.