Articulation Agreement by Major

Effective during the 2022-2023 Academic Year

To: University of California, Santa Cruz 2022-2023 General Catalog, Quarter	From: De Anza College 2022-2023 General Catalog, Quarter

Bioelectronics and Biophotonics Minor

GENERAL INFORMATION FOR ALL MINORS

UC Santa Cruz students have the option to complete one or more minors, provided they complete all of the required coursework for the minor(s). The sponsoring department establishes the course requirements for a minor. The minor involves substantial work in the discipline and requires no fewer than 25 upper-division or graduate credits. The minor appears on the student's official transcript but not on the diploma.

Students do not apply for admission into a minor when applying to UC Santa Cruz. If interested in completing a minor, transfer students must contact the department sponsoring the minor after enrolling at UCSC.

BIOELECTRONICS AND BIOPHOTONICS MINOR

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.

Please visit the department's website to learn more about this minor: https://engineering.ucsc.edu/departments/electrical-and-computer-engineering

PREPARATION FOR THE MINOR

MATH 19A: Calculus for Science, Engineering, and Mathematics

MATH 19B: Calculus for Science, Engineering, and Mathematics

PHYS 5A: Introduction to Physics I **AND** PHYS 5L: Introduction to Physics I Laboratory

PHYS 5C: Introduction to Physics III **AND** PHYS 5N: Introduction to Physics III Laboratory

CSE 12: Computer Systems and Assembly Language and Lab

ECE 13: Computer Systems and C Programming

AM 10: Mathematical Methods for Engineers I **OR** MATH 21: Linear Algebra

AM 20: Mathematical Methods for Engineers II **OR** MATH 24: Ordinary Differential Equations

PREPARATION FOR THE MINOR

MATH 19A - Calculus for Science, Engineering, and Mathematics (5.00)	←	**MATH 1A** - Calculus (5.00) **--- Or ---** **MATH 1AH** - Calculus - HONORS (5.00)
MATH 19B - Calculus for Science, Engineering, and Mathematics (5.00)	←	**MATH 1B** - Calculus (5.00) **--- And ---** **MATH 1C** - Calculus (5.00) **--- Or ---** **MATH 1BH** - Calculus - HONORS (5.00) **--- And ---** **MATH 1CH** - Calculus - HONORS (5.00)
PHYS 5A - Introduction to Physics I (5.00)	←	**PHYS 4A** - Physics for Scientists and Engineers: Mechanics (6.00)
--- And ---		
PHYS 5L - INTRODUCTION TO PHYSICS I LABORATORY (1.00)	←	**PHYS 4A** - Physics for Scientists and Engineers: Mechanics (6.00)
PHYS 5C - Introduction to Physics III (5.00)	←	**PHYS 4B** - Physics for Scientists and Engineers: Electricity and Magnetism (6.00)

--- And ---		
PHYS 5N - INTRODUCTION TO PHYSICS III LABORATORY (1.00)	←	**PHYS 4B** - Physics for Scientists and Engineers: Electricity and Magnetism (6.00)
CSE 12 - Computer Systems and Assembly Language and Lab (7.00)	←	**CIS 21JA** - Introduction to x86 Processor Assembly Language and Computer Architecture (4.50) **--- Or ---** **CIS 21JB** - Advanced x86 Processor Assembly Programming (4.50)
ECE 13 - Computer Systems and C Programming (7.00)	←	No Course Articulated
AM 10 - Mathematical Methods for Engineers I (5.00)	←	**MATH 2B** - Linear Algebra (5.00) **--- Or ---** **MATH 2BH** - Linear Algebra - HONORS (5.00)
--- Or ---		
MATH 21 - Linear Algebra (5.00)	←	**MATH 2B** - Linear Algebra (5.00) **--- Or ---** **MATH 2BH** - Linear Algebra - HONORS (5.00)
AM 20 - Mathematical Methods for Engineers II (5.00)	←	**MATH 2A** - Differential Equations (5.00) **--- Or ---** **MATH 2AH** - Differential Equations - HONORS (5.00)
--- Or ---		
MATH 24 - Ordinary Differential Equations (5.00)	←	**MATH 2A** - Differential Equations (5.00) **--- Or ---** **MATH 2AH** - Differential Equations - HONORS (5.00)

END OF AGREEMENT