

# Electrical Engineering B.S. Degree 2024-2025 Curriculum

## Math Courses

### MATH 19A

Calculus I

Prerequisites: Math Placement score of 400 or more or Math 3

### MATH 19B

Calculus II

Prerequisites: Math 19A

### AM 30

Multivariate Calculus for Engineers  
Prerequisites: AM 10 or Math 21; Math 19B

AND

### AM 100

Mathematical Methods for Engineers  
Prerequisites: AM 20 or Math 24, and AM 30 or MATH 23B

OR

### MATH 23A

Vector Calculus I  
Prerequisites: Math 19B or 20B

AND

### MATH 23B

Vector Calculus II  
Prerequisites: Math 23A

## Physics Courses

### PHYS 5A/L

Mechanics  
Prerequisites: Math 19A or 20A, and concurrent enrollment in Math 19B

### PHYS 5B/M

Waves & Optics  
Prerequisites: Phys 5A/L and Math 19B

### PHYS 5C/N

Electricity & Magnetism  
Prerequisites: Phys 5A/L, Math 19A, Corequisite Math 19B

### PHYS 5D

Heat & Thermodynamics  
Prerequisites: Phys 5A/L, Phys 5B, Math 19B

### STAT 131

Introduction to Probability Theory  
Prerequisites: Math 19B

OR

### CSE 107

Probability and Statistics for Engineers  
Prerequisites: CSE 16; and AM 30 or Math 23A

NOTE: CSE 16 is not a major requirement for EE

### AM 10\*

Math Methods I  
Prerequisites: Math Placement score of 400 or higher or Math 3

OR

### MATH 21

Linear Algebra  
Prerequisites: Math 19A

### AM 20\*

Math Methods II  
Prerequisites: Math 19B and AM 10

OR

### MATH 24

Ordinary Differential Equations  
Prerequisites: Math 23A

\*Note: AM 10 and AM 20 are preferred.

## Computer Engineering Courses

### CSE 12

Computer Systems & Assembly Language and Lab  
Prerequisites: CSE 20

### ECE 13

Computer Systems & C Programming  
Prerequisites: CSE 12 and CSE 20  
CSE 30 is recommended

## Electrical Engineering Courses

### ECE 80T^

Modern Technology

<sup>^</sup>This course is waived for transfer students.

### ECE 102/L

Properties of Materials  
Prerequisites: Phys 5A/L, 5B/M & 5C/N

### ECE 103/L

Signals and Systems  
Prerequisites: ECE 101/L and AM 20 or Math 24

### ECE 135/L

Electromagnetic Fields and Waves  
Prerequisites: ECE 101/L, and Math 24 or AM 20 or Phys 116A

### ECE 151

Communications Systems  
Prerequisites: ECE 101/L, ECE 103, and STAT 131 or CSE 107

## Electronics Courses

### ECE 101/L

Electronic Circuits

Prerequisites: Phys 5C/N and Math 24 or Phys 116A or concurrent or previous enrollment in AM 20

### CSE 100/L

Logic Design

Prerequisites: CSE 12  
Requires declared major status

### ECE 171/L

Analog Electronics

Prerequisites: ECE 101/L

**Elective Requirements:** In addition to the above, Electrical Engineering majors must complete 4 additional upper-division courses (minimum of 3 courses from one track). Unlisted graduate-level courses may be used to fulfill an elective requirement with prior department approval. **Most elective courses have additional prerequisites. They are subject to change frequently. Please visit <https://catalog.ucsc.edu/current/General-Catalog/Courses/ECE-Electrical-and-Computer-Engineering> to ensure you have met them.**

Design Elective: One of the four concentration courses chosen must include at **least one of the following design electives:** ECE 118, ECE 157/L, ECE 121, or ECE 173. *The design elective must be taken before ECE 129A.*

## Comprehensive Requirement (ECE129ABC or ECE 129A & ECE 195):

### ECE 129A Capstone Project I

Prerequisites: ECE171/L, CSE 100/L, and at least one design elective.

### ECE 129B Capstone Project II

- Prerequisites: ECE 129A

### ECE 129C Capstone Project III

- Prerequisites: ECE 129B

## Exit Requirements:

1. Exit Survey
2. Exit Interview
3. Maintain a 2.5 cumulative GPA in all required and elective courses for the major, OR submit a portfolio for department review, OR submit a senior thesis with department approval.

**Electrical Engineering B.S.  
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Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

**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.