# Curriculum for B.S. Degree in Electrical Engineering (122 units)

**CALIFORNIA STATE UNIVERSITY, LOS ANGELES**

**(Effective Fall 2026) revised 9/01/2025**

## General Education (20 units)

**Lower Division General Education Requirements (20 units)**

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| | Area 1A- Oral Communication (3) |
| | Area 1C -Written Communication (3) |
| | United States History (3) * |
| | United States Constitution and State/Local Government (3) |
| Area 3A – Arts | Select 1 course (3) * |
| Area 6 – Ethnic Studies | Select 1 course (3) * |
| Introduction to Higher Education | First-time freshmen need to take ENGR 1500 Introduction to Engineering and Technology (2); |

**Upper Division General Education Requirements (0 units)**

*Students need to select the ***US History, Areas 3A, and 6*** courses to fulfill the requirement of one race/ethnicity (***re***) and one diversity (***d***) course, or two (***re)*** courses.

## Lower Division Major Requirements (44 units)

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|---|---|
| CHEM 1040 | **General Chemistry for Engineers (4)** |
| EE/ME 1070 | **Introductory Mathematics for Engineering Applications** *Prerequisites*: MATH 1040 or MATH 1083 or MATH 2110; or with department consent |
| EE 1079 | **Introductory Mathematics for Engineering Applications Laboratory** *Pre/Co-requisites:* EE/ME 1070 |
| EE 2040 | **Circuit Analysis I (3)** *Prerequisites*: EE 1070, EE 1079 |
| EE 2049 | **Electrical Measurements and Circuits Laboratory (1)** *Prerequisites*: EE 2040 |
| EE 2440 | **Digital Engineering (3)** *Prerequisites*: None |
| EE 2449 | **Digital Logic Laboratory (1)** *Pre/Co-requisites*: EE 2440 |
| EE 2450 | **Embedded System Programming I (3)** *Pre/Co-requisites*: ENGR 1500 |
| MATH 2110 | **Calculus I (4)** *Prerequisites:* Graded C or better in either MATH 1040 or (MATH 1081 and MATH 1083) or (MATH 1082 and MATH 1083) or (ESM 1082 and MATH 1083); or scored satisfactorily on a math placement examination. Corequisite(s): MATH 2111 if any of the listed prerequisites is graded less than B-. |
| MATH 2120 | **Calculus II (4)** *Prerequisites*: MATH 2110 with a minimum C grade; students with a grade of less than B- in MATH 2110 must enroll concurrently in MATH 2121. |
| MATH 2130 | **Calculus III (3)** *Prerequisites*: MATH 2120 with a minimum C grade; students with a grade of less than B- in MATH 2120 must enroll concurrently in MATH 2131 |
| MATH 2150 | **Differential Equations (3)** *Prerequisites*: MATH 2130 |
| PHYS 2100 | **General Physics I, Mechanics (4)** *Prerequisites*: EE/ME 1070 or MATH 2110 with a minimum C grade |
| PHYS 2200 | **General Physics II, Electromagnetism and Circuits (4)** *Prerequisites*: PHYS 2100 with a minimum C grade |
| ENGL 2030 | **Introduction to Technical Writing (3)** *Prerequisites*: ENGL 1010 |

## Upper Division Major Requirements (42 units)

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| EE/ME/CE 3000 | **Economics for Engineers (3)** *Prerequisites*: Junior or Senior Standing |
| ENGR 3010 | **Ethics and Professionalism in Engineering (3)** *Prerequisites*: Junior or Senior Standing |
| EE 3003 | **Linear Algebra and Numerical Analysis in Electrical and Computer Engineering (3)** *Prerequisites*: EE 2450, Pre/*Co-req*: EE 2040 |
| EE 3020 | **Signals and Systems (3)** *Prerequisites*: EE 2040, Pre/*Co-req*: EE 3003, MATH 2150 |
| EE 3030 | **Circuit Analysis II (3)** *Prerequisites*: EE 3020 |
| EE 3040 | **Probability, Random Variable, and Random Processes (3)** *Pre/Co-requisites*: MATH 2130 |
| EE 3050 | **Electric and Magnetic Fields (3)** *Prerequisites*: EE 2040, PHYS 2200 |
| EE 3200 | **Analog Communication Systems (3)** *Prerequisites*: EE 3020 |
| EE 3300 | **Electric Machines (3)** *Prerequisites*: EE 2040, *Pre/Co-requisite*: PHYS 2200 |
| EE 3450 | **Embedded Systems Programming II (3)** *Prerequisites*: EE 2450 |
| EE 3600 | **Control Systems I (3)** *Prerequisites*: EE 3020 |

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| EE 3810 | **Sensors, Data Acquisition, & Instrumentation w/ App. in Biomedical Engr. (3)** *Prerequisites*: EE 2440, *Pre/Co-requisite*: EE 2049 |
| EE 4961 | **Senior Design I (3)** *Prerequisites*: Completion of Blocks A1 and A2, ENGR 3010, EE/ME/CE 3000, EE 3020, EE 3450, and EE3810 |
| EE 4962 | **Senior Design II (3)** *Prerequisites*: EE 4961 with grade of C or higher |

## Upper Division Technical Electives (16 units)

*Select 5 lecture courses and 1 lab from the following. (3 lecture and 1 lab courses in one specialty with advisor's approval.)*

### Lecture Electives (15 units):

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| EE/ME/CS 3420 | **Introduction to Autonomous Robotic Systems (3)** *Prerequisites:* EE 2450 |
| EE 3700 | **Electronics I (3)** *Prerequisites*: EE 2040 |
| EE 3710 | **Electronics II (3)** *Prerequisites*: EE 3700 |
| EE 3720 | **Digital Electronics (3)** *Prerequisites*: EE 2440, EE 3700 |
| EE 4130 | **Systems Engineering (3)** *Prerequisites*: EE 3600 |
| EE 4200 | **Digital Communication Systems (3)** *Prerequisites*: EE 3200, EE 3040 |
| EE 4210 | **Coding for Communications (3)** *Prerequisites*: EE 3200 |
| EE 4220 | **Digital Signal Processing (3)** *Prerequisites*: EE 3200 |
| EE 4230 | **Antennas (3)** *Pre/Co-requisites*: EE 3050 |
| EE 4240 | **Fiber Optics (3)** *Prerequisites*: EE 3200 |
| EE 4250 | **Digital Image Processing (3)** *Prerequisites*: EE 3200 |
| EE 4300 | **Introduction to Power Systems Engineering (3)** *Prerequisites*: EE 3300 |
| EE 4310 | **Power Systems Analysis (3)** *Prerequisites*: EE 4300 |
| EE 4320 | **Electric Power Distribution (3)** *Pre/Co-requisites*: EE 4300 |
| EE 4330 | **Power Electronics (3)** *Prerequisites*: EE 3030 |
| EE 4340 | **Electromagnetic Energy Conversion (3)** *Prerequisites*: EE 3300 |
| EE 4400 | **Data Communications and Networking (3)** *Prerequisites*: EE 3200 |
| EE 4420 | **Multimedia Networking (3)** *Prerequisites*: EE 4400, Knowledge of MATLAB |
| EE 4440 | **Computer Organization (3)** *Prerequisites*: EE 3450 |
| EE 4450 | **Embedded Architectures (3)** *Prerequisites*: EE 3450 |
| EE 4480 | **Advanced Digital Design (3)** *Prerequisites or Co-requisites*: EE 4440 |
| EE 4600 | **Applied Control System Design and Simulation (3)** *Prerequisites*: EE 3600 |
| EE 4610 | **Digital Control Systems (3)** *Prerequisites*: EE 3600 |
| EE 4620 | **Modern Control Systems (3)** *Prerequisites*: EE 3020 |
| EE 4630 | **Machine Learning Principles and Applications (3)** *Prerequisites*: EE 3020, EE 3040 |
| EE 4710 | **Analog Integrated Circuits (3)** *Prerequisites*: EE 3700 |
| EE 4720 | **CMOS VLSI Design (3)** *Prerequisites*: EE 3720 |
| EE 4730 | **Optoelectronics (3)** *Prerequisites*: EE 3700 |
| EE 4810 | **Biomedical Devices (3)** *Prerequisites*: EE 2040 |
| EE 4820 | **Biomedical Signal Processing (3)** *Prerequisites*: EE 3020 |

### Laboratory Electives (1 unit):

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| EE 3209 | **Communications Laboratory (1)** *Prerequisites*: EE 3200 |
| EE 3309 | **Electromagnetic Energy Conversion Laboratory (1)** *Prerequisites*: EE 3300, EE 2049 |
| EE 3709 | **Electronics Laboratory (1)** *Pre/Co-requisites*: EE 3710 |
| EE 4229 | **Digital Signal Processing Laboratory (1)** *Pre/Co-requisites*: EE 4220 |
| EE 4459 | **Systems Design Tools and Implementation Laboratory (1)** *Prerequisite*: EE 2450 |
| EE 4689 | **Control Systems Laboratory (1)** *Pre/Co-requisites*: EE 3600 |

### Additional Courses That May Count Towards Major with Department Approval:

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| EE 3540 | **Special Topics in Electrical Engineering (1-3)** *Prerequisites*: Department Permission |
| EE 4009 | **Professional Engineering Practice (1)** *Prerequisites*: Department Permission under the conditions: acceptance by the corresponding worksite; junior, senior, or graduate standing; min 2.5 GPA for undergraduates and 3.0 for graduates. |
| EE 4540 | **Special Topics in Electrical Engineering (1-3)** *Prerequisites*: Senior standing or graduate standing in EE, enrollment subject to approval of instructor in charge. Permission needed by the EE Department. |
| EE 4990 | **Undergraduate Directed Study (1–3)** *Prerequisites*: Department Permission |