

# BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Engineering is broadly described as the creative application of scientific and mathematical principles used to design, develop, improve, and analyze structures, machines, devices, components, systems, and industrial processes useful to society.

Electrical engineering is the field of engineering that deals with the application and study of electricity, electronics, and electromagnetism.

Career opportunities include electrical design, simulation, electrical systems, schematic diagrams, validation, power distribution, test equipment, circuit design, system engineering, computer aided drafting, and programmable logic controller programming.

## KNOWLEDGE AND SKILLS EMPHASIZED

Students who graduate with a Bachelor of Science in Electrical Engineering:

- Apply knowledge of mathematics, physics, and electrical engineering to solve problems
- Use the techniques, skills, and modern electrical engineering tools necessary for electrical engineering practice
- Design and conduct experiments, as well as analyze and interpret data
- Design an electrical system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Identify, formulate, and solve electrical engineering problems
- Apply knowledge of advanced mathematics and physics necessary for electrical engineering
- Demonstrate an understanding of professional and ethical responsibility
- Understand the impact of electrical engineering solutions in a global, economic, environmental, and societal context
- Recognize the need for, and an ability to, engage in life-long learning
- Relate their degree to a knowledge of contemporary issues

## FOR MORE INFORMATION

Call 760-750-7202 or email: [jmorales@csusm.edu](mailto:jmorales@csusm.edu)



CSUSM

CSUSM.EDU

## DEGREE REQUIREMENTS

All courses counted toward the major, including Preparation for the Major courses, must be completed with a grade of C (2.0) or better. A minimum of fifteen (15) upper-division units counted toward the major must be completed at CSUSM.

### BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Units General Education*	48
Lower Division Physics Essentials and Math & Science Supporting Courses*	36
Upper Division Physics Essentials & Electrical Engineering Core	48

Students must take a sufficient number of elective units to bring the total number of units to a minimum of 120.

\*Six (6) lower-division General Education units in Area B (Math and Science) are automatically satisfied by courses taken in Preparation for the Major.

LOWER DIVISION PHYSICS ESSENTIALS (15 UNITS)	Units
PHYS 201 Physics of Mechanics and Sound	4
PHYS 202 Physics of Electromag. and Optics	4
PHYS 203 Modern Physics	4
EE 280 Intro to Electronics	3

MATH & SCIENCE SUPPORTING COURSES (21 UNITS)	Units
CS 111 Computer Science I	4
CS 231 Assembly Language and Digital Circuits	4
MATH 160 Calculus w/ Applications I	5
MATH 162 Calculus w/ Applications II	4
MATH 260 Calculus w/ Applications III	4

UPPER DIVISION PHYSICS ESSENTIALS & ELECTRICAL ENGINEERING CORE (48 UNITS)	Units
MATH 342 Prob. and Stats. for Eng./Scientists	3
MATH 346 Methods for Physicists/Engineers	3
PHYS 321 Classical Electromagnetism	3
PHIL 348 Ethics in Engineering	3
EE 301 Digital Electronics	4
EE 303 Signals and Systems	3
EE 322 Solid State Devices	3
EE 330 Electronic Circuits I	4
EE 402 Embedded Microsystems	4
EE 415 Sensors and Controls	4
EE 430 Electronic Circuits II	4
EE 491A Senior Project Planning	1
EE 491B Senior Lab Project	3
Electrical Engineering Electives (Choose electives from EE 404, EE 406, EE 435,	6 or more units