COMPUTER ENGINEERING BS

More Information

Advising Requirement

Advising is mandatory for this program. Consult your department advisor or program coordinator for information.

E-advising Tools

Students are encouraged to use the interactive e-advising tools that have been designed to help them graduate within four years. These tools can be accessed through the Student Center.

The Bachelor of Science in Computer Engineering bridges the curriculum gap between electrical/electronic engineering and computer science. The program is designed to provide a broad background in both the theory and practice of computer hardware and software design and their integration into usable digital systems. The curriculum includes courses in logic design, microprocessor system design, programming, algorithms, data structures, computer architecture, embedded system design and implementation, microelectronic circuits, and computer networking.

The Computer Engineering program is accredited by the Engineering Accreditation Commission (EAC) of the ABET, http://www.abet.org.

Computer Engineering Program Mission

The Electrical and Computer Engineering Department educates each student to be a responsible and productive computer engineer who can effectively respond to future challenges.

Computer Engineering Program Objective

Program educational objectives describe the career and professional accomplishments that the program strives to prepare its graduates to achieve within five years. The Computer Engineering program prepares its graduates to

- Contribute to solutions of engineering problems by applying their technical knowledge, their experience with modern industry tools, and their understanding of the impact that engineering can have on global, societal, and environmental issues.
- Assume project/product management and team leadership roles in their organizations.
- Engage in activities that sustain and promote their careers by securing professional licenses, completing graduate courses and/or degree programs, and/or pursuing informal learning opportunities.
- Contribute to society through involvement in professional and/or service activities.

Computer Engineering Student Outcomes

Computer Engineering program graduates should have the ability to

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Computer Engineering Design Experience

Design is a fundamental aspect of the computer engineering curriculum and it is integrated into the curriculum beginning in the freshman year where students are introduced to both hardware and software design. As students expand their knowledge and analysis skills through the sophomore and junior years, the design problems they are assigned increase in complexity. Design problems are assigned in electronics, digital and microprocessor systems, embedded systems, and software systems.

The design experience culminates in the senior year when all students are required to identify a design project, create testable requirements for the project, design the project, and construct the project to prove the design works. Projects chosen by students often include elements of both hardware and software design. Descriptions of recent student capstone projects can be found on the Electrical Engineering and Computer Engineering Department website (http://www.csuchico.edu/eece/index.shtml/).

Grading Requirement

All courses taken to fulfill program course requirements must be taken for a letter grade except those courses specified by the department as credit/no credit grading only.

All students must attain a 2.0 Grade Point Average (GPA) in all college courses attempted and for all courses attempted at California State University, Chico. Computer Engineering majors must also attain a 2.0 GPA in:

1. All courses required for the major, and
2. All Electrical and Computer Engineering (ECE) and Computer Science (CSCI) courses taken to meet major requirements at Chico State.

Enrollment in any mathematics course requires a grade of C- or higher in all prerequisite courses or their transfer equivalents.

Course Requirements for the Major: 102 units

Completion of the following courses, or their approved transfer equivalents, is required of all candidates for this degree. Courses in this program may complete more than one graduation requirement.

Course	Title	Units
Lower Division		
CHEM 111	General Chemistry I	4
CSCI 111	Programming and Algorithms I	4
CSCI 211	Programming and Algorithms II	4
CSCI/MATH 217	Discrete Mathematics	3
EECE 101	Exploration of Electrical and Computer Engineering	3

EECE 144	Logic Design Fundamentals	4
EECE 211	Linear Circuits I	3
EECE 211L	Linear Circuits I Activity	1
EECE 237	Embedded Systems Development	3
MATH 120	Analytic Geometry and Calculus	4
MATH 121	Analytic Geometry and Calculus	4
MATH 260	Elementary Differential Equations	4
PHYS 204A	Physics for Students of Science and Engineering: Mechanics	4
PHYS 204B	Physics for Students of Science and Engineering: Electricity and Magnetism	4
Upper Division		
CSCI 311	Algorithms and Data Structures	4
CSCI/EECE 446	Introduction to Computer Networks and Network Management	3
EECE 311	Linear Circuits II	4
EECE 315	Electronics I	4
EECE 343	Computer Architecture Performance and Implementation	4
EECE 344	Digital Systems Design	4
EECE 365	Signals, Systems, and Transforms	4
EECE 437	Real-Time Embedded Systems	4
EECE 490AW	Engineering Profession and Design (W)	4
EECE 490B	Engineering Economics and Project Implementation	4
EECE 525	High Performance Computing	4
MATH 350	Introduction to Probability and Statistics	3
Select seven units from the following:		7
Select one of the following:		
CSCI 430	Software Engineering	
EECE 416	CMOS Digital Integrated Circuits Design	
Select three to four units from the following:		
Any approved upper-division engineering, science, or math courses not otherwise required for graduation, to meet your total upper-division major requirement.		
Total Units		**102**

Honors in the Major

Honors in the Major is a program of independent work in your major. It requires 6 units of honors course work completed over two semesters.

The Honors in the Major program allows you to work closely with a faculty mentor in your area of interest on an original performance or research project. This year-long collaboration allows you to work in your field at a professional level and culminates in a public presentation of your work. Students sometimes take their projects beyond the University for submission in professional journals, presentation at conferences, or academic competition. Such experience is valuable for graduate school and professional life. Your honors work will be recognized at your graduation, on your permanent transcripts, and on your diploma. It is often accompanied by letters of commendation from your mentor in the department or the department chair.

Some common features of Honors in the Major program are:

- You must take 6 units of Honors in the Major course work. All 6 units are honors classes (marked by a suffix of H), and at least 3 of these units are independent study (399H, 499H, 599H) as specified by your department. You must complete each class with a minimum grade of B.
- You must have completed 9 units of upper-division course work or 21 overall units in your major before you can be admitted to Honors in the Major. Check the requirements for your major carefully, as there may be specific courses that must be included in these units.
- Yourcumulative#GPA should be at least 3.5 or within the top 5% of majors in your department.
- Your GPAin your major#should be at least 3.5 or within the top 5% of majors in your department.
- Most students apply for or are invited to participate in Honors in the Major during the second semester of their junior year. Then they complete the 6 units of course work over the two semesters of their senior year.
- Your honors work culminates with a public presentation of your honors project.

While Honors in the Major is part of the Honors Program, each department administers its own program. Please contact your major department or major advisor to apply.

See Bachelor's Degree Requirements (https://catalog.csuchico.edu/undergraduate-requirements/bachelors-degree-requirements/) for complete details on general degree requirements. A minimum of 39 units, including those required for the major, must be upper division.

General Education Requirements: 48 units

See General Education (https://catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/) and the Class Schedule (http://www.csuchico.edu/schedule/) for the most current information on General Education Requirements and course offerings.

This major has approved GE modification(s). See below for information on how to apply these modification(s).

- Critical Thinking (A3) is waived (https://www.calstate.edu/attend/student-services/casper/Pages/high-unit-majors.aspx).
- PHYS 204B fulfills Life Science (B2).
- Take only one course in either Arts (C1) or Humanities (C2). The other is waived.
- EECE 490B is an approved major course substitution for Social Sciences (D).
- EECE 490AW is an approved major course substitution for Lifelong Learning and Self-Development (E).
- EECE 311 fulfills Upper-Division Scientific Inquiry and Quantitative Reasoning (UD-B).

Diversity Course Requirements: 6 units

You must complete a minimum of two courses that focus primarily on cultural diversity. At least one course must be in U.S. Diversity (USD) and at least one in Global Cultures (GC). See Diversity Requirements (https://catalog.csuchico.edu/undergraduate-requirements/diversity-requirements/) for a full list of courses. Most courses taken to satisfy these requirements may also apply to General Education (https://

catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/).

Upper-Division Writing Requirement

Writing Across the Curriculum (EM 17-009 (http://www.csuchico.edu/prs/EMs/2017/17-009.shtml/)) is a graduation requirement and may be demonstrated through satisfactory completion of four Writing (W) courses, two of which are designated by the major department. See Mathematics/Quantitative Reasoning and Writing Requirements (https://catalog.csuchico.edu/undergraduate-requirements/mathematicsquantitative-reasoning-writing-requirements/) for more details on the four courses. The first of the major designated Writing (W) courses is listed below.

- Any upper-division Writing (W) course.

The second major-designated Writing course is the Graduation Writing Assessment Requirement (GW) (EO 665 (https://calstate.policystat.com/policy/9585618/latest/)). Students must earn a C- or higher to receive GW credit. The GE Written Communication (A2) (https://catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/#A2) requirement must be completed before a student is permitted to register for a GW course.