

COMPUTER ENGINEERING

School of Computer Science and Engineering

Jack Brown Hall, Room 307
(909) 537-5326 <http://cse.csusb.edu/>

Department of Physics

Physical Sciences Building, Room 119
(909) 537-5397 <http://physics.csusb.edu/>

Bachelor of Science

Computer Engineering

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

FACULTY: Richard Botting, Arturo Concepcion,
George Georgiou (Director), Ernesto Gomez, Yasha Karant,
Josephine Mendoza, Owen Murphy, Haiyan Qiao,
Keith Schubert, David Turner, Kerstin Voigt, Tong Yu,
Kay Zemoudeh

DEPARTMENT OF PHYSICS FACULTY: Steven Barnes,
Leo Connolly, Paul Dixon (Chair), Karen Kolehmainen,
Susan Lederer, Paul Renteln, Javier Torner, Timothy Usher,
Laura Woodney

Computer Engineering is a discipline with historical foundations in computer science and electrical engineering. It is concerned with the study of a variety of topics including circuit design, programmable logic, computer design, computer programming, software engineering, data communication, machine intelligence, robotics, the algorithmic solutions of problems, and the various representations of information including numeric, alphabetic, visual, audio and sensory. This discipline deals with effective ways to represent and manipulate information, algorithms to process information, hardware systems and technologies to run software, design methodologies for hardware and software systems, and engineering techniques for ensuring the accuracy and cost effectiveness of these processes.

The degree is jointly administered by the School of Computer Science and Engineering and the Department of Physics. The program is housed in the School of Computer Science and Engineering.

B.S. IN COMPUTER ENGINEERING

Requirements (132 units)

Total units required for graduation: 201

Requirements for the B.S. in Computer Engineering:

Lower-division requirements (68 units)

1. CHEM 215. General Chemistry I: Atomic Structure and Chemical Bonding (6)
2. CSE 152. Introduction to Engineering Design (2)
3. CSE 201. Computer Science I (4)
4. CSE 202. Computer Science II (4)
5. MATH 211. Basic Concepts of Calculus (4)
6. MATH 212. Calculus II (4)
7. MATH 213. Calculus III (4)
8. MATH 251. Multivariable Calculus I (4)
9. MATH 252. Multivariable Calculus II (4)
10. MATH 262. Applied Statistics (4)
11. MATH 272. Discrete Mathematics (4)
12. PHYS 150. Analog Electronics (5)
13. PHYS 221. General Physics I (5)
14. PHYS 222. General Physics II (5)
15. PHYS 223. General Physics III (5)
16. PHYS 224. General Physics IV (3)

Upper-division requirements (56 units)

1. CSE 303. Computer Engineering Design (1) for a total of (7)
2. CSE 310. Digital Logic (5)
3. CSE 311. Advanced Digital Design (4)
4. CSE 313. Machine Organization (4)
5. CSE 330. Data Structures (4)
6. CSE 401. Contemporary Computer Architectures (5)
7. CSE 403. Circuit Design and Analysis (4)
8. CSE 455. Software Engineering (4)
9. CSE 460. Operating Systems (4)
10. CSE 535. Numerical Computation (4)
11. PHYS 318. Materials Science and Engineering (4)
12. PHYS 350. Data Acquisition and Control (4)
13. PHYS 373. Mathematical Methods of Physics (4)

Specialization (8 units)

1. Take two courses in one specialization for a total of eight units from one of the following:

Networking and Computer Systems

- CSE 350. File Systems (4)
- CSE 530. Data Communication and Networks (4)
- CSE 531. High Performance Networks (4)
- CSE 570. Compilers (4)

High Performance and Embedded Systems

- CSE 510. Advanced Computer Architecture (4)
- CSE 521. Field Programmable Gate Array Design (4)
- CSE 541. Robotics and Control (4)

DEPARTMENTAL HONORS

IN COMPUTER ENGINEERING

The department faculty will determine whether a student is to be awarded departmental honors based upon the following criteria:

1. Demonstration of independent work by achieving a grade of "C" or better (2.0) in any one of the following:
 - A. CSE 575. Internship in Computer Science (4)
 - B. CSE 595. Independent Study (4)
 - C. PHYS 585. Internship in Physics (4)
 - D. PHYS 595. Independent Study (4)
2. Attainment of a minimum overall grade point average of 3.0 ("B") in all university courses attempted and a minimum grade point average of 3.5 in all computer science courses required by the major.
3. At least five upper-division computer engineering courses required by the major must be taken at this university.

Candidacy for honors in computer engineering is voluntary and must be applied for at the beginning of the senior year. Approval of honors rests solely with the department and other factors may weigh in their judgment.