Why pursue the integrated B.S./M.S. degree in Computer Engineering?

The Integrated B.S./M.S. program in Computer Engineering is designed to provide students with a strong understanding of the hardware design and practical applications of computer-based systems. Courses in contemporary and highly evolving computer engineering areas provide students with extensive hardware design and modeling experience, exposure to state-of-the-art Electronic Design Automation (EDA) tools and the ability to design and analyze today's modern computer systems. The program integrates pertinent science, mathematics and engineering courses in order to develop an engineer capable of designing and analyzing all aspects of modern computer and embedded systems.

Academically promising students will have the exceptional opportunity to complete both the bachelor's and master's degrees in four years through the Integrated B.S./M.S. degree program. This cohort program will prepare students for leadership roles in careers with industry, government and educational institutions.

Why choose Cal State Fullerton?

Distinguished Faculty - Our faculty members are highly qualified and diverse. The College of Engineering and Computer Science supports high-quality teaching, learning and research by providing a well-equipped instructional environment and investing in student internships. Our faculty members are experienced professionals, hold doctoral degrees from prestigious universities, and have active research programs in computer engineering, electrical engineering and computer science. Adjunct faculty who bring students important knowledge of current practices and trends in computer engineering supplement the full-time faculty members.

Preparation for further graduate work - The B.S./M.S. program in Computer Engineering is designed to be flexible enough to provide excellent preparation for further graduate work.

Student participation in research - Although the college does not require student participation in research, many of our students participate in one or more research projects before graduation. Most grant-supported research
in the college includes funds to support student research. Several of our students have co-authored research papers with faculty members.

**Industrial partnerships** - The multidisciplinary senior design project, an innovative component of the computer engineering curriculum, allows students to work in project teams on professional design and development projects for clients from industry, government and the community. Partnerships with leading companies enable students and faculty to collaborate on funded projects of mutual interest with company engineers and scientists. Students gain invaluable practical experience and develop the skills necessary to work effectively in an interdisciplinary environment.

**Accreditation** - The Bachelor of Science degree in Computer Engineering at Cal State Fullerton is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

The proliferation of embedded systems in an increasing array of industrial products assures a ready market for graduates in the computer engineering discipline. Computer engineers are employed in a wide range of industries including VLSI chip design and manufacturing, autonomous systems, consumer electronics, expert systems, smart devices, digital signal processing (DSP) systems, computer manufacturing from PDAs to super computers, and automatic controls. A majority of products such as airplanes, automobiles, home appliances, consumer electronics and robots, to name a few, use computers and employ computer engineers in their designs. Computer engineers are also needed in the design and implementation of computer networks for business, industrial and governmental institutions.

### What types of career opportunities are available?

Entering freshmen must be CSUF eligible and meet the following requirements:

- Must have a minimum high school GPA (unweighted) of 3.0;
- Must have successfully completed at least three AP courses (defined as receiving a score of 3, 4 or 5) towards the major and/or General Education (total of 10 semester credits);
- One of the three AP courses must include Mathematics/Calculus AB or Mathematics/Calculus BC (score of 4 or 5 is required).

**Admission Requirements for International Students**

International students must meet all requirements listed above. Verification of English proficiency and financial resources will be governed by University-established criteria. All international students must submit their TOEFL score before they are admitted to the program. A minimum score of 500 on the paper-based TOEFL exam or 61 on the Internet-based TOEFL exam is required for freshman admission to the cohort program.

The students in the program must complete all the requirements for the B.S. and the M.S. degree with a total of 150 semester units. The 150 units required for the four-year Integrated B.S./M.S. degree program in Computer
Engineering include 31 units of foundation courses in mathematics and science, 24 units of courses (unduplicated) in General Education, 74 units of required core courses in the major, and 21 units of elective courses. Courses designated below are: CPSC for computer science courses, EGCP for computer engineering courses and EGEE for electrical engineering courses.

**Mathematics and Physical Science Courses (34 units)**
Mathematics 150A, 150B, 250A, 250B and 270A; Physics 225 and 225L, 226 and 226L, 227 and 227L.

**Required core for the B.S. portion of the B.S./M.S. degree (56 units)**
- CPSC 120 Introduction to Programming (3 units)
- CPSC 121 Programming Concepts (3 units)
- CPSC 131 Data Structures Concepts (3 units)
- CPSC 253U Workshop in UNIX (1 unit)
- CPSC 351 Operating Systems Concepts (3 units)
- EGCP 180 Digital Logic and Computer Structures (3 units)
- EGCP 280 Microcontrollers (3 units)
- EGCP 281 Designing with VHDL (2 units)
- EGCP 371 Modeling and Simulation of Signals and Systems (3 units)
- EGCP 381 Computer Design and Organization (4 units)
- EGCP 401 Engineering Economics & Professionalism (3 units)
- EGCP 441 Advanced Electronics for Computer Engineers (4 units)
- EGCP 446 Advanced Digital Design using Verilog HDL (3 units)
- EGCP 450 Embedded Processor Interfacing (4 units)
- EGCP 470 Multidisciplinary Projects in Computer Engineering - I (1 unit)
- EGCP 471 Multidisciplinary Projects in Computer Engineering - II (2 units)
- EGEE 203 Electric Circuits (3 units)
- EGEE 203L Electric Circuits Laboratory 1 unit)
- EGEE 303 Electronics (3 units)
- EGEE 303L Electronics Laboratory (1 unit)
- EGEE 323 Engineering Probability and Statistics (3 units)

**Required core for the Graduate Study Plan (18 units)**
- EGCP 456 Introduction to Logic Design in Nanotechnology (3 units)
- EGCP 461 Low Power Digital IC Design (3 units)
- EGCP 520 Advanced Computer Architecture (3 units)
- EGCP 541 Mixed-Signal IC Design (3 units)
- EGCP 542 VLSI Testing and Design for Testability (3 units)
- EGCP 556 Advanced Nanoelectronics (3 units)

**Technical Electives (21 units)**
Students choose elective courses with the approval of their adviser from the following areas: Wireless Communication, Very Large Scale Integration (VLSI) and Optics, Control Systems and Systems Engineering, Microprocessors and Microcomputer Systems, Computer Networks, Hardware Security, Global Positioning Systems (GPS), Software Engineering, Database System Design, Multimedia and Digital Game Development and Intelligent Systems.
General Education Courses (42 units; 24 units unduplicated)
Students complete courses for the following categories: Core Competencies, Scientific Inquiry and Quantitative Reasoning, Arts and Humanities, Social Sciences, Lifelong Learning and Self Development and Cultural Diversity. A course listing is available from the faculty adviser.

Are there special programs or internships available?
Computer engineering majors may take advantage of opportunities provided by the Center for Internships and Community Engagement. Through internships, students gain work experience, network and develop industry contacts, earn academic credit, solidify academic and career goals, earn money while learning, and explore career options. In addition, the Center for Academic Support in Engineering and Computer Science (CASECS) provides services that help educationally disadvantaged students achieve a high level of academic success in engineering and computer science. For more information, call 657-278-3879.

What types of financial aid and scholarships are available?
Scholarships such as the Alumni Association Scholarship, the ECS Dean's Scholarship and the Emmett D. Burnett Scholarship are awarded to eligible students in the College of Engineering and Computer Science. Additional scholarships are available from off-campus sources. For scholarship and financial aid information, please call the Office of Financial Aid at 657-278-3125, or visit fullerton.edu/financialaid/.

How can I get involved?
Students enjoy opportunities for leadership and participation in clubs and organizations, research, community service and assistantships. Choices of professional student organizations include: the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, Association for Computing Machinery (ACM), National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), Society of Mexican-American Engineers and Scientists (MAES), Society of Women Engineers (SWE), and Tau Beta Pi Engineering Honor Society (TBP).

Who advises me?
Computer engineering faculty members advise students. To make an appointment, call 657-278-5987 or email cpenprogram@fullerton.edu. All students are required to meet with an adviser at least once each year to ensure that degree requirements are being met.

How can I learn more?
For more information, visit the program's website at fullerton.edu/ecs/cpe or email cpenprogram@fullerton.edu. Our program office is located in the Engineering Building, room E-100G. For an appointment, call us at 657-278-5987 or contact us by mail at: California State University Fullerton, Computer Engineering Program (E-100G), Fullerton, CA 92834-6870. Fax: 657-278-5804.