Senior Design and Research
Undergraduate seniors undertake a comprehensive and intensive capstone project known as the senior design project. In-depth application of the skills learned during the preceding years, from initial concept development through analysis, design, and report writing, replicates the process demanded of engineers in practice. To name just a few recent projects, students have developed numerous video games, created a Dynamic MIDI Controller offering an entirely new way of composing music, and have worked on the control systems of a wide range of applications—from nanosatellites to a fully functional solar-powered home that took third place in the U.S. Department of Energy's Solar Decathlon competition. A highlight of the academic year, the Senior Design Conference affords students an opportunity to present their projects before a panel of alumni and other invited industry judges.

Co-op and Internship Programs
Situated in the heart of Silicon Valley, a mecca of innovation and entrepreneurship, SCU offers computer science and engineering students unsurpassed opportunities for corporate internships and cooperative education. Working with an industry partner in a business setting provides an invaluable range of experiences, and allows students to put their academic prowess to work.

Study Abroad
Studying in a foreign country provides an unmatched experience that engineering undergraduates can readily enjoy. Sample plans for freshmen and sophomores make it easy to prepare for this tremendous opportunity. Students can spend one or more terms abroad, complete their coursework, and graduate within four years.

After Graduation
SCU's mix of practical and theoretical experiences and our commitment to academic and ethical excellence cultivates outstanding engineers who are highly sought-after candidates for higher education and employment. Our students are well prepared to enter graduate computer engineering programs at SCU or any school across the country. Employers in Silicon Valley and globally provide a wealth of opportunities for SCU computer science and engineering graduates in a variety of career paths.

Faculty
Ahmed Amer, associate professor, Ph.D., UC Santa Cruz. Expertise: distributed storage systems, predictive management of data and storage, alternative and upcoming storage technologies, energy management
Darren Atkinson, associate professor, Ph.D., UC San Diego. Expertise: software engineering, compilers, static analysis tools, data structures, programming languages
Ronald Danielson, associate professor, Ph.D., University of Illinois at Urbana-Champaign. Expertise: impact of information technology on organizations, Web-based educational tools, human-computer interaction
Ruth Davis, Lee and Seymour Graff Professor and associate dean for undergraduate studies, Ph.D., UC Santa Cruz. Expertise: formal methods in software engineering, programming languages, improving diversity in engineering
Yi Fang, assistant professor, Ph.D., Purdue University. Expertise: Web science, data-intensive computing, large-scale information retrieval
Silvia Figueira, associate professor, Ph.D., UC San Diego. Expertise: distributed systems, mobile computing, wireless networks, replicated databases
JoAnne Holliday, associate professor, Ph.D., UC Santa Barbara. Expertise: distributed systems, mobile computing, wireless networks, replicated databases
Daniel Lewis, associate professor, Ph.D., Syracuse University. Expertise: embedded systems, K-12 outreach
Nam Ling, chair, Santillippo Family Professor, IEEE Fellow, Ph.D., University of Louisiana at Lafayette. Expertise: video and image coding, architecture, video communications
Yuhong Liu, assistant professor, Ph.D., University of Rhode Island. Expertise: trustworthy computing, cyber security issues in social networking, cloud computing and cyber physical systems
Weijia Shang, associate professor, Ph.D., Purdue University. Expertise: parallel processing, computer architecture, algorithm theory, nonlinear programming
Ben Steichen, assistant professor, Ph.D., Trinity College Dublin. Expertise: human-centered computing, personalization, interactive information retrieval and visualization, web and data science

For further information, please contact
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www.scu.edu/engineering/cse
Computer Science and Engineering

Our Program
Located in the Department of Computer Engineering at SCU, the Computer Science and Engineering Program offers a comprehensive education for bachelor’s, master’s, and Ph.D. students. Our outstanding faculty, emphasis on values-based education, and focus on collaborative learning create an excellent environment for academic and personal growth that prepares our graduates to meet the challenges of an increasingly complex, digital world.

Students work with engaged, passionate faculty members who are leaders in their fields. A solid theoretical foundation, hands-on laboratory experience, and a curriculum that challenges students to think and act ethically, help prepare our graduates to either continue with advanced study or enter the workforce, where they are ready to make real contributions to society.

In this program, students have access to all the tools they need to be successful, including uncommonly accessible mentors who truly enjoy teaching, small classes, state-of-the-art computer laboratory facilities, interdisciplinary projects in which graduate and undergraduate students collaborate, and research opportunities available to all students, from freshmen to Ph.D. candidates.

Many students opt to participate in our combined B.S./M.S. program to earn both a bachelor’s and a master’s degree in as little as five years.

Program Educational Objectives
The computer engineering department has a comprehensive set of educational objectives for bachelor’s, master’s, and Ph.D. degree graduates.

Undergraduate objectives
- Our graduates will achieve success in their professional endeavors, equipped with the liberal education and technical expertise required for the creative practice or advanced study of computing; will be motivated to communicate and work effectively in diverse personal and professional settings; and will demonstrate an appreciation of lifelong learning through continued personal and professional development.
- Our graduates will understand their personal and professional ethical responsibilities, and will observe and promote the highest ethical standards.
- Our graduates, equipped with their knowledge of science and engineering, will engage in activities that contribute to the benefit of society.

Curriculum
The computer engineering department takes to heart the University’s mission to “educate the whole person.” Our curriculum is design-oriented and laboratory-intensive, with an emphasis on hands-on experience and teamwork that is crucial to success in a competitive workplace. In addition to providing an outstanding engineering education, we also prepare students to communicate effectively and work in a global economy.

At SCU, the core curriculum and our department’s educational enrichment experience complement our comprehensive computer science and engineering courses with studies providing the knowledge, habits of mind, and ethical reflection that prepare students for meaningful engagement with the world. Our program offers the flexibility for undergraduates to take 12 or more units, selected in consultation with their academic advisor, that are tailored to their own interests. Students wishing to round out their education by studying abroad, learning a foreign language, or taking graphic arts courses can easily do so through our program.

Computer science and engineering focuses on the theoretical and practical aspects of computing.

Combining features of both computer science and computer engineering, this field of study concerns the design and construction of both software and hardware systems. The discipline spans areas such as networking and the World Wide Web, embedded programming, software engineering, digital hardware systems, information assurance, and robotics.

Our students design and implement software and hardware, devise new ways to use computers, and develop effective methods for solving the world’s problems. Our program has a strong engineering flavor, emphasizing the design, implementation, testing, and utilization of software and systems to optimize performance, reliability, and cost.

Computer science and engineering graduates find fulfilling careers in a number of exciting fields. Robotics, computer security, and Web technologies are just a few of the avenues open to them.

Undergraduate and graduate courses in computer science and engineering
- artificial intelligence
- computer architecture
- computer forensics
- computer hardware
- computer networks
- databases
- embedded systems
- graphics
- operating systems
- programming languages
- software engineering
- Web programming

B.S. specialization tracks
- information assurance
- robotics
- Web technologies

M.S. specialization tracks
- architecture and systems
- computer networks
- information assurance
- multimedia processing
- software engineering