Enrichment Options

Our distinctive undergraduate engineering program allows our students to incorporate one of four exceptional enrichment options without extending the time required to graduate.

Co-op and Internship Programs

Located in Silicon Valley, the center for innovation and entrepreneurship, SCU offers students unsurpassed opportunities for corporate internships and cooperative education. Co-op students are employed in a paid and discipline-related engineering position for six months in the spring and summer of their junior year.

Study Abroad

Studying in a foreign country provides an unmatched opportunity for undergraduates to experience life from a different perspective. Students can even take all electives while studying abroad during the fall of their junior year.

Combined B.S./M.S.

Many students opt to participate in our department's combined B.S./M.S. program to earn both a bachelor's and a master's degree in as little as five years, while saving one-third the cost of tuition for the M.S.

Individualized Study

Working with their advisors, students may craft their own unique program of study, taking 12 or more units tailored to their own particular educational objectives.

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 programs in computing at SCU or any school across the country. Employers in Silicon Valley and globally provide a wealth of opportunities for our graduates in a variety of career paths.

Faculty

Maya Ackerman, assistant professor, Ph.D., University of Waterloo. *Expertise:* machine learning, computational creativity, cluster analysis, algorithmic composition

Ahmed Amer, associate professor, Ph.D., UC Santa Cruz. *Expertise:* systems software, ethics, distributed 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

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

Behnam Dezfouli, assistant professor, Ph.D., Universiti Teknologi Malaysia. *Expertise:* internet of things, wireless networks, software-defined networking, performance evaluation of computer networks

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:* computing for sustainable development, humanitarian engineering

Daniel Lewis, associate professor, Ph.D., Syracuse University. *Expertise:* embedded systems, K-12 outreach

Xiang Li, assistant professor, Ph.D., University of Florida. *Expertise:* social networks analysis, large-scale optimization and its intersection with cyber-security of networking systems, big data analysis, cyber physical systems

Nam Ling, chair, Sanfilippo Family Professor, IEEE Fellow, Ph.D., University of Louisiana at Lafayette. *Expertise:* video and image coding, architecture, video communications

Ying Liu, assistant professor, Ph.D., The State University of New York at Buffalo. *Expertise:* image and video analysis, computer vision, machine learning, high-dimensional data, compressed sensing

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

For further information, please contact

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SANTA CLARA UNIVERSITY

Web Design and Engineering

Santa Clara University

The Jesuit University in Silicon Valley

Web Design and Engineering

At SCU, students have access to all the tools they need to be successful, including uncommonly accessible mentors, small classes, and state-of-the-art computer laboratory facilities. Our 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, ready to make real contributions to society.

Educational Objectives

The Web Design and Engineering program is designed to achieve three objectives:

- To produce graduates who can analyze, design, and improve the computational infrastructure of the World Wide Web

- To produce graduates who can develop interactive multimedia content that is appealing, engaging, effective, and easy to use

- To produce graduates whose work is guided by an understanding of, and sensitivity to, the social, political, ethical, and legal relationships between their work and those that it affects

Curriculum

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

Program Requirements

Computing

- computer networks
- introduction to Web technologies
- programming and data structures
- software engineering
- Web information management
- Web infrastructure
- Web programming
- Web usability

Liberal Arts

- computer imaging
- computers, the Internet, and society
- constructing websites
- graphic design
- introduction to mass communication
- technology and communication
- visual communication

Senior Capstone Project

For this comprehensive and intensive project, students apply skills learned in the preceding years, taking the project from initial concept development through analysis, design, and report writing, replicating the process demanded of engineers in practice. Students receive the benefit of mid-year design reviews and present their completed projects before a panel of alumni and other industry judges.

"...understanding the Web and being able to engineer its future requires not only an understanding of the Web as a computational structure, but also how it interacts with, and supports the interaction of, people."[1]

In little more than a decade, the Internet has become pervasive in our lives, competing with television as a medium for presenting news and entertainment and changing the way we communicate, how we shop, and how we learn. The technology that enables the Web is complicated and extensive, yet most of us think of it in terms of how convenient, intuitive, and pleasing we find our online experience to be. As the Web evolves and matures, those who design and develop the technology require a better understanding of the relationship between the infrastructure and the experience it creates, of how the Web affects society, and of how the new and innovative ways in which society uses the Web often create new demands on its technology.

Our Program

The bachelor's degree in Web Design and Engineering offers an interdisciplinary education that blends the technology of computing with preparation in the aesthetics of graphic design and user interface design to effectively deliver engaging multimedia content for the Web. Relevant material from communication, sociology, and applied ethics is included, empowering our students with an understanding of the relationship between the Web and those who use it.

[1] J. Hendler, N. Shadbolt, W. Hall, T. Berners-Lee, and D. Weitzner, "Web Science: An Interdisciplinary Approach to Understanding the World Wide Web," *Communications of the ACM, 51, no. 7 (July 2008): 60–69.*