

Engineering Excellence

The Jack Baskin School of Engineering at the University of California, Santa Cruz, is a cutting-edge training ground for 21st-century engineers. Our rigorous curricula and laboratory requirements promote creative thinking, preparing you for a productive career in rapidly evolving high-technology disciplines.



In particular, the Baskin School focuses on biotechnology, information technology, and nanotechnology—three interrelated fields that we consider critical for the future. Careers in these areas are changing in a world that becomes smaller with each advance in communications and transportation, the Internet, and global education.

To train engineers who adapt to these challenges, the Baskin School involves its students in interdisciplinary study and research, working with colleagues at UCSC and other institutions in a variety of fields. These collaborations have led to new progress in areas such as bioinformatics, bioengineering, renewable energy, digital arts and new media, computer game design, and information systems management.

I invite you to apply to become part of the exciting advances in research and technology taking place at the Jack Baskin School of Engineering, the engineering school of the 21st century.

Sincerely,

Michael Isaacs, Acting Dean
Jack Baskin School of Engineering

Departments, Programs, and Degrees

Applied Mathematics and Statistics

www.ams.ucsc.edu

- ▶ Undergraduate Minor in Statistics
- ▶ Statistics and Applied Mathematics: M.S., Ph.D.

The Department of Applied Mathematics and Statistics focuses on modeling the world around us in order to solve real-world problems. The department uses an interdisciplinary approach to applications such as environmental analysis, risk assessment, and quality assessment in health and education, epidemiology, and astrophysics.

Biomolecular Engineering

www.bme.ucsc.edu

- ▶ Undergraduate Minor in Bioinformatics
- ▶ Bioinformatics: B.S., B.S./M.S., M.S., Ph.D.
- ▶ Bioengineering: B.S.

Bioengineering focuses on the application of engineering tools and techniques to the problems of medicine and biological sciences. The field of bioinformatics combines mathematics, science, and engineering to explore and understand biological data from high-throughput experiments, such as genome sequencing and gene expression chips.

Computer Engineering

www.ce.ucsc.edu

- ▶ Undergraduate Minor in Computer Engineering
- ▶ Undergraduate Minor in Computer Technology
- ▶ Computer Engineering: B.S., B.S./M.S., M.S., Ph.D.
- ▶ Bioengineering: B.S.
- ▶ Network Engineering: M.S.

Computer engineering focuses on the design, analysis, and application of computers and on their applications as components of systems. Areas of research include VLSI design and packaging; CAD; high-speed network design; network protocol design; field programmable gate arrays; robotic systems; parallel computation; image processing; storage, retrieval, and transmission; and computer architecture.

Computer Science

www.cs.ucsc.edu

- ▶ Undergraduate Minor in Computer Science
- ▶ Computer Science: B.A., B.S., M.S., Ph.D.
- ▶ Computer Science: Computer Game Design: B.S.

Computer science is the study of the theoretical and practical aspects of computer technology and computer usage. Areas of research include analysis of algorithms, artificial intelligence, machine learning, computer graphics, computer animation, scientific visualization, computer vision, programming languages, software engineering, real-time systems, computer security, databases, parallel and distributed computation, operating systems, storage systems, and computer game design.

Electrical Engineering

www.ee.ucsc.edu

- ▶ Undergraduate Minor in Electrical Engineering
- ▶ Electrical Engineering: B.S., M.S., Ph.D.
- ▶ Bioengineering: B.S.

Electrical engineering is a broad discipline that addresses the design and understanding of devices, circuits, and systems that use electromagnetic waves in electronic or optical signals for applications as varied as biomedical devices, astronomical telescopes, renewable energy systems, single molecule detection, cellular and wireless network technology, image processing, and next generation computing devices.

Information Systems Management

www.tim.ucsc.edu

- ▶ Undergraduate Minor in Information Systems and Technology Management
- ▶ Information Systems Management: B.S.
- ▶ Technology and Information Management: M.S., Ph.D. (under review)

Information systems management (ISM) is the application of information technology to support the major functions and activities of either a private-sector business or public-sector institution. The ISM program combines the intellectual content of computer science with that of business management economics.

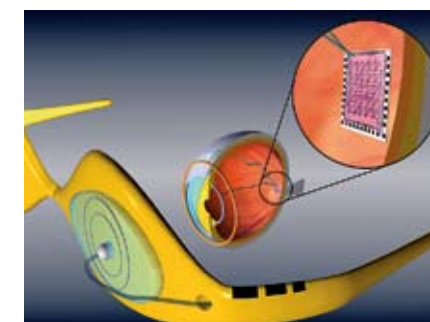


KIMMEN SJOLANDER

Engineering alumni and their UC Santa Cruz degrees

UC Santa Cruz has produced many successful alumni in engineering-related fields. For example:

- ▶ MALCOLM BLANCHARD (*B.A., computer and information sciences, '72*), cofounder of Industrial Light & Magic; chief software engineer at Pixar Animation
- ▶ PEGGY DOLGENOS (*B.A., computer and information sciences, '92*), cofounder of Cruzio, an Internet service provider and web-hosting service
- ▶ DIGBY HORNER (*B.A., computer science/chemistry, '84*), senior vice president of Engineering Technologies Group at Adobe Systems
- ▶ BALA PARTHASARATHY (*M.S., computer engineering, '91*), cofounder and chief technical officer of SnapFish
- ▶ DR. ANAND PATIL (*Ph.D., applied mathematics and statistics, '07*), coordinator, Malaria Atlas Project, Oxford, England
- ▶ DR. KIMMEN SJÖLANDER (*B.A., computer science, '93; Ph.D., computer science, '97*), associate professor of bioengineering at UC Berkeley, specializing in bioinformatics
- ▶ DR. MATTHEW TADDY (*Ph.D., statistics and stochastic modeling, '08*), Assistant professor of econometrics and statistics at the University of Chicago Graduate School of Business



MEDICAL BREAKTHROUGH Current research in electrical engineering by Professor Wentai Liu has led to the discovery of technology that may lead to an artificial retina to help overcome certain forms of blindness.

Recent Achievements of the Baskin School

- ▶ **2000:** UCSC engineers David Haussler and Jim Kent assemble first online draft of the human genome.
- ▶ **2000:** UCSC joins California Institute for Quantitative Biomedical Research (QB3) with UC Berkeley and UC San Francisco.
- ▶ **2002:** UCSC joins the Center for Information Technology Research in the Interest of Society (CITRIS) with UC Berkeley, UC Davis, and UC Merced.
- ▶ **2003:** NASA awards 10-year, \$330 million contract for a University
- ▶ **2008:** The Engineering Honor Society at UC Santa Cruz is officially installed as the California Alpha Delta Chapter of Tau Beta Pi, the largest engineering honor association in the world.
- ▶ **2008:** The newly established Lolland California Renewable Energies (LoCal-RE) program brings together UCSC and Danish faculty and students for international collaboration on renewable energy during a four-week summer program in Lolland, Denmark.
- ▶ **2005:** UCSC and the Baskin School embark upon the Bio-Info-Nano Research and Development Institute (BIN-RDI) at NASA Ames.
- ▶ **2006:** UCSC and the Baskin School launch the first computer game design major in the UC system.

Affiliated Research Center (UARC) at NASA Ames Research Center, managed by UCSC and focusing on information technology, nanotechnology, and aerospace; UCSC joins Caltech and USC to form NSF-sponsored Center for Biomimetic MicroElectronic Systems.



ROBOTICS COMPETITION WINNERS In March 2008, a team of four students from UCSC's Baskin School won the first-place trophy in a national student competition sponsored by the Aerospace Division of the American Society of Civil Engineers. The winning design was a solar-powered robot that can climb up a vertical ribbon while carrying a payload, an application that would form part of a "space elevator." Senior electrical engineering students Bill Hogan, Kevin Hichborn, Laurel DeMarco, and Scott Therien pose with their trophy. Photo courtesy of Peg Hogan.

How We Make a World of Difference

At UC Santa Cruz, making a world of difference means both changing the world for the better, and creating a world where the differences among us are celebrated. Come join us!

Getting involved in research

As a student at UCSC, you can join ongoing faculty research and creative projects or develop your own projects under the supervision of a mentor. Many of our undergraduates copublish papers in academic journals. www.ucsc.edu/students/undergraduate

Athletics and recreation

In addition to numerous club sports and intramural teams, UCSC has men's and women's NCAA Division III teams in basketball, soccer, swimming and diving, tennis, and volleyball, plus women's cross-country and golf. Athletics: goslugs.com
Recreation: www2.ucsc.edu/opers

Student organizations

Develop your leadership skills or your technical abilities, learn more about yourself and others, and just have fun! UCSC offers over 100 student organizations. soar.ucsc.edu
soe.ucsc.edu/advising/organizations

Communities of learning: the 10 residential colleges

Your UCSC college is a smaller community within the university where you will find friendship, intellectual engagement, academic and personal support, and opportunities for leadership. You will be

affiliated with a college whether you live on campus or not. Our colleges are interdisciplinary, so all majors are welcome at all colleges. housing.ucsc.edu/colleges

How UC Santa Cruz is ranked worldwide

- ▶ **1st nationally for research impact in molecular biology and genetics** (2008, *Science Watch*)
- ▶ **1st nationally for research impact in physics** (2007, *Science Watch*)
- ▶ **3rd nationally for scholarly productivity in music and environmental health engineering** (2007, *Chronicle of Higher Education*)
- ▶ **4th in North America for research productivity in conservation biology** (2007, *Conservation Biology*)
- ▶ **6th largest green power purchaser among U.S. colleges and universities** (2008, Environmental Protection Agency)
- ▶ **23rd nationally for Hispanic students** (2005, *HISPANIC* magazine)
- ▶ **35th among public national doctoral universities** (2008, *U.S. News & World Report*)
- ▶ **UC's Education Abroad Program (EAP)** Many UCSC students participate in EAP, which offers study abroad in 34 countries. Of UC campuses, UCSC has the highest percentage of upper-division students participating in EAP, when averaged over the last five years. eap.ucop.edu
admissions.ucsc.edu/rankings

Baskin Engineering Faculty and Research

Included in our faculty are members of the National Academy of Sciences and of the American Academy of Arts and Sciences, and fellows of the IEEE (Institute of Electrical and Electronics Engineers), ACM (Association for Computing Machinery), the American Association for the Advancement of Science, and SPIE (originally known as the Society of Photo-Optical Instrumentation Engineers).

Human Genome Research. A team of researchers at UC Santa Cruz, including Professor David Haussler and then-graduate student Jim Kent, used bioinformatics to create a powerful new computer program that assembled the "working draft" of the human genome announced in June 2000. Dr. Jim Kent is now a researcher at UCSC, and the Baskin School continues to lead the field of genome research with its Genome Browser at genome.ucsc.edu.

Statistics. Raquel Prado, associate professor of applied mathematics and statistics, uses statistics to study the effects of stress and disease on biological functions. Dr. Prado's research is used in a variety of applications, such as measuring signs of debilitating fatigue in NASA astronauts and studying the potential effectiveness of vaccines against malaria.

Renewable Energy. Ali Shakouri, professor of electrical engineering and director of the Thermionic Energy Conversion Center, leads a consortium of six universities in developing technology to create a thermoelectric conversion device that will convert waste heat to electricity with a thousand times the efficiency of present-day devices. Professor Shakouri's research group at UCSC is also developing internally cooled semiconductor lasers.

Computer Game Design. To help launch the new major in computer game design, UCSC hired Michael Mateas, a leading researcher in the area of artificial intelligence for computer games. Dr. Mateas, an associate professor of computer science, focuses on creating computer-controlled characters that have rich emotions, dialogue, and interactions with their environment.

KENT and HAUSSLER



PRADO

SHAKOURI

MATEAS



UCSC Facts and Figures

Name

University of California, Santa Cruz

Opened

1965

Emphasis A nationally ranked research university committed to excellence in undergraduate and graduate education

Undergraduate grading system

Traditional A–F (4.0) scale, plus written performance evaluations

A profile of UC Santa Cruz students

- ▶ Total enrollment for fall 2007: 15,820
- ▶ 14,381 undergraduates; 1,439 graduate students
- ▶ 54 percent women; 46 percent men

Jack Baskin School of Engineering Statistics

- ▶ Number of faculty: 102
- ▶ Number of undergraduates: 897
- ▶ Number of graduate students: 309
- ▶ Average class size of lower-division engineering courses: 76
- ▶ Average class size of upper-division engineering courses: 15

Ethnic composition of undergraduates

UC Santa Cruz seeks to enroll and graduate a student body that reflects California's diverse cultural, racial, geographical, and socioeconomic backgrounds. In fall 2007, ethnic composition of undergraduates was African American, 2.6%; American Indian, 0.9%; Asian American/Pacific Islander, 20.6%; Chicano/Latino, 16.5%; Euro-American, 51%; international, 0.5%; not stated, 7.9%.

Fall 2008 admission profile*

(all figures represent the mean)

FRESHMEN

GPA: 3.70

ACT Comprehensive: 25

ACT–English with Writing: 25

ACT–Reading: 26

ACT–Mathematics: 26

SAT Reasoning—Critical Reading: 582

SAT Reasoning—Math: 602

SAT Reasoning—Writing: 586

TRANSFER STUDENTS

GPA: 3.30

*Statistics are as of summer 2008 and are subject to change.

Undergraduate expenses 2008–09**

	On campus	Off campus
Fees***	\$8,286	\$8,286
Food and Housing	\$13,038	\$9,675
Books and Supplies	\$1,356	\$1,356
Transportation	\$840	\$1,557
Personal Expenses	\$1,470	\$1,575
Resident Totals	\$24,990	\$22,449
Additional		
Nonresident Fees	\$588	\$588
Nonresident Tuition	\$20,022	\$20,022
Nonresident Totals	\$45,600	\$43,059

** Undergraduate budgets are subject to change. For updated information, see admissions.ucsc.edu/financial_aid

*** Additional \$1,248 (estimate) health insurance fee is charged if student is not already covered.

Financial Aid: In 2007–08, more than \$130 million in student aid was distributed to UC Santa Cruz undergraduates. See www2.ucsc.edu/fin-aid

Admissions Information

Admission to UC Santa Cruz

To study at the Jack Baskin School of Engineering, you must first apply for admission to UC Santa Cruz. To apply for the fall quarter of the coming year, you may file your application online at www.universityofcalifornia.edu/apply between November 1 and 30.

Admission to UC Santa Cruz is selective. For admissions information for both freshmen and transfer students, please see admissions.ucsc.edu.



Admission to the Jack Baskin School of Engineering (BSOE)

Freshman Applicants:

Applicants will be granted direct acceptance based on their high school grade-point average, courses completed in mathematics and sciences, scores on standardized tests, and/or their personal statement. Applicants who are not directly admitted may still apply during their first year.

Transfer Applicants: Admission into the major will be based on the student's academic college record. Applicants are encour-

aged to take and excel in as many courses that are equivalent to the department's foundation courses as possible. An applicant will be approved, conditionally approved, or declined. Only students who have completed all or most of the foundation courses will be approved or conditionally approved for the major.

Please see the current *UC Santa Cruz General Catalog* for a full description of the BSOE admissions policy or www.soe.ucsc.edu/admissions. For more information, e-mail soeadmissions@soe.ucsc.edu or call (831) 459-5840.

Come Visit!

Tours offered year-round, as well as group-advising workshops for transfer students. Make reservations online at admissions.ucsc.edu/campustours

Campus directory

Admissions (admissions.ucsc.edu) . . . (831) 459-4008

Admissions (*en español*) (831) 459-2594

Disability Resource Center

(www2.ucsc.edu/drc) (831) 459-2089

TDD/TTY (831) 459-4806

Financial Aid

(www2.ucsc.edu/fin-aid) (831) 459-2963

Housing Services

(housing.ucsc.edu) (831) 459-2394

Services for Transfer and Re-Entry

Students (stars.ucsc.edu) (831) 459-2552

Jack Baskin School of Engineering

University of California, Santa Cruz
1156 High Street
Santa Cruz, CA 95064

www.soe.ucsc.edu
(831) 459-5840



How to get to UC Santa Cruz:

The campus is located off Highway 1 on the Central Coast of California, 75 miles south of San Francisco, 350 miles north of Los Angeles, and 30 miles southwest of San Jose.



soe.ucsc.edu

