

# COMPUTER SCIENCE 2008-09

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## UNIVERSITY OF CALIFORNIA, SANTA CRUZ

### THE COMPUTER SCIENCE MAJOR

The computer science curriculum has options that include topics in hardware and software, giving students a solid grounding in both theoretical and practical computer usage. Students become proficient in many areas, with a good academic foundation for various careers in the software industry, as well as preparation for graduate school.

### STUDY AND RESEARCH OPPORTUNITIES

- ◆ B.A., B.S., M.S., Ph.D., and Undergraduate Minor
- ◆ The Computer Science Department engages in a substantial research program in which both advanced undergraduates and all graduate students participate.
- ◆ UC Santa Cruz is the only UC campus to offer a full degree program in computer game design. Please refer to the computer science: computer game design major sheet for more information.

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### ADMISSION TO THE JACK BASKIN SCHOOL OF ENGINEERING (BSOE)

Please see the current *UC Santa Cruz General Catalog* for a full description of the BSOE admissions policy.

**Freshman Applicants:** Admission into a BSOE major is based on high school grade point average, test scores, courses completed in mathematics and sciences, and/or the personal statement. Applicants who are not accepted into the major at the time of admission to UCSC may still reapply for admission to the major after enrolling at UC Santa Cruz.

**Transfer Applicants:** Admission into the major will be based on the student's academic college record. Applicants are encouraged to take and excel in as many courses that are equivalent to the department's foundation courses as possible (see *Transfer Preparation* section). An applicant will be approved, conditionally approved, or declined. Only students who have completed most or all of the foundation courses will be approved or conditionally approved for the major.

### HIGH SCHOOL PREPARATION

It is recommended that high school students intending to apply to the BSOE have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school, including one year each of chemistry, physics, and biology. Comparable college mathematics and science courses completed at other institutions may be accepted in place of high school preparation. Students without this preparation may be required to take additional courses to prepare themselves for the program.

### TRANSFER PREPARATION

The BSOE strongly encourages applications from transfer students. Due to the prerequisite structure for upper-division courses, it is necessary for prospective transfer students to have completed as many of the lower-division requirements for the respective majors as possible in order to complete the degree within a reasonable time. Students must plan carefully because many courses must be taken sequentially. Applicants must take and excel in as many courses that are equivalent to the department's foundation courses as possible. UC Santa Cruz foundation courses in computer science are:

- Computer Science 12A/L, *Introduction to Programming with Laboratory*, and 12B/M, *Introduction to Data Structures with Laboratory*
- Computer Engineering 16, *Applied Discrete Mathematics*, or Computer Engineering 16H, *Honors Applied Discrete Mathematics*
- Mathematics 19A and 19B, *Calculus for Science, Engineering, and Mathematics* (two quarters)

Transfer students should not follow the Intersegmental General Education Transfer Curriculum (IGETC) because it will not provide transfer students with enough mathematics and engineering courses to allow them to complete these programs at UC Santa Cruz in two years.

In addition to the foundation courses required for admission, some transfer students may choose to take other articulated lower-division courses for the major. Such courses are listed on the web site [www.assist.org](http://www.assist.org). For a complete list of lower-division courses for the major, visit [www.so.e.ucsc.edu/programs/cs/undergraduate/curriculum.html](http://www.so.e.ucsc.edu/programs/cs/undergraduate/curriculum.html).

**CAREERS**

Animation and graphics programming	Programming languages and compilers
Computer security	Software development
Computer systems design, development, and administration	Technical writing
Database system design, development, and administration	Web development

*These are only samples of the field's many possibilities.*

**INTERNSHIPS, FIELD WORK, AND EDUCATION ABROAD OPPORTUNITIES**

Many students find internships and fieldwork to be a valuable part of their academic experience. They work closely with faculty and career advisers in the UC Santa Cruz Career Center to identify existing opportunities and often to create their own internships with local companies or in nearby Silicon Valley. For more information about internships, visit [intern.ucsc.edu](http://intern.ucsc.edu).

BSOE students may wish to develop their cross cultural competency, typically via the Education Abroad Program (EAP). Interested students must work very closely with the faculty and academic advisers in their major very early during the freshman or sophomore year to create a plan for transferability of course work towards graduation. For more EAP information, visit [eap.ucop.edu/eap/country/default.htm](http://eap.ucop.edu/eap/country/default.htm).

**ALUM FOCUS**

Mark Henne (M.S., computer science, '90) works at Pixar, and has contributed computer graphics to the films *A Bug's Life*, *Monsters Inc.*, and *The Incredibles*, for which he was the Hair and Cloth Simulation Supervisor. Michael Cornwell (B.A., computer science, '99) developed the SMART computer program that enables Linux operating system users to foresee and avoid hard-drive failures. Yoav Freund (Ph.D., computer science, '93) won the Goedel Prize in 2003 for his research developing the AdaBoost machine learning algorithm.

**RECOGNITION**

Professors Wang-Chiew Tan, Alkis Polyzotis, Dimitris Achlioptas, and Jim Whitehead have received grants from the National Science Foundation under the prestigious NSF Early Career Development (CAREER) Program. Associate Professor Cormac Flanagan and Associate Professor Dimitris Achlioptas were awarded Sloan Research Fellowships in computer science by the Alfred P. Sloan Foundation. The Carnegie Foundation for the Advancement of Teaching named Professor Charles McDowell a 2001-02 Carnegie Scholar. Professor McDowell is the second UC Santa Cruz faculty member in the history of the campus to serve as a Carnegie Scholar. Professor Darrell Long holds the Kumar Malavalli Endowed Chair in Storage Systems, and is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). Professors Ira Pohl and Phokion Kolaitis are Fellows of the Association for Computing Machinery (ACM). Associate Professor Michael Mateas' computer game *Facade* won the Grand Jury Prize at the 2006 Slamdance Independent Games Festival, and has been featured in the *Economist*, the *New York Times*, and *Newsweek*.

**FOR MORE INFORMATION**

For further information about the computer science major, see:

[reg.ucsc.edu/catalog/html/programs\\_courses/cmppsPS.html](http://reg.ucsc.edu/catalog/html/programs_courses/cmppsPS.html)

The computer science page of the BSOE web site can be found at:

[www.cs.ucsc.edu/undergraduates](http://www.cs.ucsc.edu/undergraduates)

If you have other questions, contact:  
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