

COMPUTER SCIENCE

PREPARATION FOR THE MAJOR

High School Preparation

Recommended in addition to the UC admission requirements:

Mathematics including trigonometry, math analysis, and calculus; Physics; Computer programming (Java or C++ preferred).

Transfer Preparation

To make normal progress in the major, complete the following courses before transferring:

Two terms of calculus; linear algebra and differential equations; multivariable calculus; computer programming courses covering algorithm design, preferably to include Java and C++ (or Pascal and C), and at least one assembly language.

BS: Add 1-1.5 years of engineering physics with lab.

BA, Computational Biology emphasis, add one year of general chemistry with lab, and an entire series of general biology with lab (2-3 terms).

BA, Computational Economics emphasis: One year of general physics or general chemistry with laboratory; micro and macro economics; ethics.

BA, Computational Geography emphasis, add one year of general chemistry or general physics with lab; introductory meteorology; physical and cultural geography; maps and mapping; ethics.

Please see the UCSB *General Catalog* (www.catalog.ucsb.edu) or your counselor for more information.

Computer usage has grown dramatically during the last decade and people around the world are affected by multiple computer systems each day. Computer science deals with the development of programs and procedures (mainly software) used by computers to solve problems. Virtually any problem, the solution to which can be expressed in an unambiguous step-by-step process, can be programmed on a computer.

The Computer Science Department offers state-of-the-art teaching by a first-class faculty, in a dynamic and rich research environment. The degree programs help students become computer professionals who are prepared for long-term careers in information technology. Our graduates work in a spectrum of settings, from Fortune 500 companies to start-ups, as well as in a variety of government agencies and at universities in teaching, administrative and research positions. Computers change the world. Come help us change it for the better.

The Major

UCSB's program familiarizes students with the major fields of computer science. This prepares students for a variety of opportunities, including continued study in graduate school or immediate employment in business, industry, or government. Such flexibility is essential in a dynamic field, where innovations lead to dramatic changes virtually overnight.

UCSB's Department of Computer Science offers two degrees: the Bachelor of Science (BS), which is offered by the College of Engineering, and the Bachelor of Arts (BA), which is offered by the College of Letters and Science. The BS degree is accredited by the Computing Accreditation Commission of ABET.

The BS degree offers an engineering and science plan of study, while the BA degree integrates the computer science curriculum into a liberal arts education. The core courses required in the freshman and sophomore years are similar for both programs. The Bachelor of Arts program emphasizes computing as a way to impact biology, economics or geography, in an education that truly crosses boundaries. Computing means teamwork, collaboration, and the interdisciplinary skills that modern careers require. These emphases cross traditional boundaries which will help you build the collaborative, social, and technical skills that today's employer's demand. For more information on the BA options, please see: www.cs.ucsb.edu/undergraduate/

The Pre-Computer Science Major

Some UCSB majors, including Computer Science, admit students to a pre-major. The pre-major lays the foundation for the advanced coursework that follows. Students should declare the pre-major when they apply to UCSB to receive the highest priority when registering for computer science courses. UCSB accepts applications from pre-computer science majors for the fall quarter only.

Students must satisfy course and grade-point average (GPA) requirements to advance from the pre-major to the major. The following pre-major course requirements should be completed with a minimum University of California GPA of 2.75. (Transfer students, please note: Transfer equivalents to these courses will be applied to the pre-major subject

requirement, but not to the pre-major GPA requirement. Only that portion of the pre-major completed at the University of California will be applied to the pre-major GPA requirement.)

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| Calculus | Programming Methods |
| Linear Algebra and Differential Equations | Introduction to Computer Systems |
| Vector Calculus | Foundations of Computer Science |
| Probability and Statistics | Programming Project |
| Computer Programming | Introduction to C, C++ and UNIX |

Once admitted to the major, students have the opportunity to take courses in such diverse areas as data structures, computer architecture, operating systems, language translation, and data base management. They also will be required to take courses in supporting disciplines such as physics and probability and statistics.

Computing Facilities

One of the most important aspects of the Computer Science program at UCSB is the wealth of “hands-on” opportunities for students. UCSB has excellent computer facilities. The campus Instructional Computing facility makes accounts available to all students. Their facilities include late model PCs and Macs. Computer Science majors use the UNIX workstations in the Computer Science Instructional Laboratory (CSIL) and Engineering Computing Infrastructure facilities. The Computer Science department also operates a 50-node, 125-cpu “Beowulf” cluster. Students doing special projects have access to machines at the National Science Foundation’s Supercomputing Centers via the Internet. The CSIL is on a 100 Base-T switched network connected to the Computer Science backbone connected to the campus backbone connected to an OC-12 link to the outside world at 155 megabits/second.

Student Organizations

A student chapter of the Association for Computing Machinery (ACM), one of two major professional societies for computer scientists, allows students to share interests and maintain contact with industry. ACM organizes field trips to assist students with career planning. Student chapters of the Society of Women Engineers, Los Ingenieros, and the National Society of Black Engineers are also active on the UCSB campus.

Five Year Baccalaureate/Masters Degree Programs

The College offers several opportunities for outstanding students to earn baccalaureate and masters’ degrees in five years. These include the BS/MS program in computer science, and the five year program in which outstanding students may earn a Bachelor of Science degree in computer science and a Master of Arts degree in economics with an emphasis in business economics. These programs provide students greater flexibility in planning in-depth programs of study at the undergraduate level while making rapid progress toward completion of a graduate degree. The computer science/economics program is ideal for students considering careers in technical management.

Careers in Computer Science

In addition to providing excellent preparation for graduate study, the computer science major prepares students for job opportunities in a wide variety of areas. Computer science students have little trouble securing interesting jobs in local, state, and national corporations and agencies.

For more information on UCSB’s Computer Science major, please call or write to:

Undergraduate Admissions Coordinator
College of Engineering
University of California, Santa Barbara
Santa Barbara, CA 93106-5130
805/893-2809
e-mail: admissions@engineering.ucsb.edu
website: www.engineering.ucsb.edu/admit
or contact the Undergraduate Advisor in Computer Science at:
ugradv@cs.ucsb.edu