



# UC Berkeley

## Computer Science

### Computer Science, B.A.

## Major Description

UC Berkeley construes computer science broadly to include the theory of computation, the design and analysis of algorithms, the architecture and logic design of computers, programming languages, compilers, operating systems, scientific computation, computer graphics, databases, artificial intelligence and natural language processing. The Electrical Engineering and Computer Science Department's goal is to prepare students for both a possible research career and long-term technical leadership in industry. The department, therefore, looks beyond today's technology and gives students the big ideas and the learning skills that will prepare them to teach themselves about tomorrow's technology.

## Starting Your Computer Science Degree

### Lower-Division Major Requirements in Computer Science

From UC's perspective, community college is where you begin working on the first two years of your bachelor's degree. This includes taking lower-division coursework specifically related to your field of study that may be applied toward graduation in your major.

Listed below are the lower-division requirements for **Computer Science, B.A.** that may be satisfied with approved community college courses unless otherwise noted. To find out which of these requirements are shared by other UC campuses, see the UC Statewide Transfer Preparation Path in Computer Science.

- Calculus (full sequence)
- Linear Algebra
- Differential Equations
- Discrete Mathematics (equivalent of one semester is **strongly** recommended; **must** include coverage of logic, infinity, and induction, modular arithmetic and GCDs; polynomials, and probability including samples spaces, independence, random variables and law of large numbers; to complete requirement, a bridge course after transfer to UCB is required)
- Introduction to Digital Electronics (recommended; upon transfer, the course will be evaluated for credit)

**!!! IMPORTANT !!!**  
All of these requirements do not necessarily have to be completed **before** you transfer. See the next section of this path for what you must do to be competitive for admission.

**FIND YOUR COURSES**  
Every course at your community college that can be used to meet any of the lower-division major requirements is listed at [www.assist.org](http://www.assist.org)

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The following courses may require a bridge course after transfer to UCB:

- The Structure and Interpretation of Computer Programs (CompSci 61A; any course approved as comparable **must** include assignments involving functional programming, object-oriented programming and study of a LISP interpreter.)
- Data Structures (Comp Sci 61B; **must** include coverage of hashing, heaps, priority queues and graphs, with at least one programming assignment of 500 or more lines of code)
- Machine Structures (Comp Sci 61C; **must** require students to work with an interrupt handler and include significant treatment of fundamentals of computer architecture, namely CPU and cache design and implementation of virtual memory; assumes knowledge of a C-based language)

## Becoming Competitive for Admission to Computer Science

### Selection Requirements

Below are the lower-division requirements that this campus advises applicants to complete, and by when, to be competitive for admission to the major. It is important to note that meeting these requirements does not necessarily guarantee admission to the campus or major. The stronger your major preparation, the more competitive you will be.

- The College of Letters and Science requirements (Reading and Composition, Quantitative Reasoning and Foreign Language) or IGETC, strength of academic preparation and GPA are the primary selection criteria for admission.
- By the end of the spring term preceding fall enrollment, you **must** complete either the College of Letters and Science requirements or IGETC, and as many lower-division major-preparation courses as possible.
- You are advised to complete as many lower-division major-preparation courses as possible prior to transfer, even if you receive partial satisfaction.
- To be competitive you should take UC-transferable courses in data structures, even if not officially comparable to UCB's Computer Science 61B, and Java (preferred) or C++.
- To be competitive you should take a UC-transferable course in machine structures, even if not officially comparable to UCB's Computer Science 61C. (You will likely need to retake UCB's CS 61C. An advanced course or collection of courses may qualify you for a bridge course in this area.)

## Satisfying General Education in Computer Science

### General Education Requirements

While all UC campuses urge you to focus on your lower-division major requirements while in community college, it is important to remember that general education (GE), or "breadth," requirements for your bachelor's degree may also be met with approved community college courses. In fact, some majors require completion of lower-division GE coursework as part of your preparation prior to transfer. The good news is you may be able to double-count some of your lower-division major coursework for related GE requirements.

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The Intersegmental General Education Transfer Curriculum (IGETC) is a series of courses at California community colleges that students may complete to satisfy GE requirements. Certain students, however, may not be well served by following this GE option. Specific information about satisfying GE requirements as a Computer Science major is listed below.

- You **must** satisfy GE/breadth requirements with either IGETC or the College of Letters and Science requirements (Reading and Composition, Quantitative Reasoning and Foreign Language) by the end of the spring term preceding fall enrollment.

## Related Majors

Preparation for the following major may be similar to the Computer Science major described above (consult the campus catalog and [www.assist.org](http://www.assist.org)).

- Electrical Engineering and Computer Sciences, B.S.