

COMPUTER SCIENCE, BACHELOR OF SCIENCE

College of Letters & Science

The Major Program

The Department of Computer Science administers two majors: Computer Science & Engineering (CSE) and Computer Science (CS). It also administers two minors: Computer Science (<https://catalog.ucdavis.edu/departments-programs-degrees/computer-science-engineering/computer-science-minor/>) and Computational Biology (<https://catalog.ucdavis.edu/departments-programs-degrees/computer-science-engineering/computational-biology-minor/>). For information on the Computer Science & Engineering curriculum and the minor in Computational Biology, see Computer Science Engineering (<https://www.ucdavis.edu/majors/computer-science-and-engineering/>).

The primary differences between the CSE and CS majors are the extent of hardware coverage and curricular flexibility. The CSE major develops a solid understanding of the entire machine, including hands-on experience with its hardware components. The CS major teaches some hardware, at the digital-design level, on simulators. The CSE major has fewer free electives. The CS major's more generous electives make it easier to complete a minor or double major.

Students in the CS major receive a solid grounding in the fundamentals of computer languages, operating systems, computer architecture, and the mathematical abstractions underpinning computer science. Students are prepared for both industry and postgraduate study.

Major Advisors

A. Abrahamson, K. Gage, J. Sison; For information on how to speak to an advisor, see CS Undergraduate Advising (<https://cs.ucdavis.edu/advising/>).

Graduate Study

See Graduate Studies (<http://gradstudies.ucdavis.edu/>).

Before declaring a major in Computer Science, students must complete specific course requirements and meet GPA minimums. Visit the CS Advising webpage (<https://cs.ucdavis.edu/undergraduate/changing-majors-double-majors/>) for a full list of requirements to declare the major.

Code	Title	Units
Preparatory Subject Matter		
<i>Mathematics</i>		
MAT 021A	Calculus	4
MAT 021B	Calculus	4
MAT 021C	Calculus	4
Choose one:		3-4
MAT 022A	Linear Algebra	
MAT/BIS 027A	Linear Algebra with Applications to Biology	
MAT 067	Modern Linear Algebra	
<i>Computer Science Engineering</i>		20
ECS 020	Discrete Mathematics For Computer Science	
ECS 036A	Programming & Problem Solving	

ECS 036B	Software Development & Object-Oriented Programming in C++	
ECS 036C	Data Structures, Algorithms, & Programming	
ECS 050	Computer Organization & Machine-Dependent Programming	
Choose three:		15
BIS 002A	Introduction to Biology: Essentials of Life on Earth	
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	
BIS 002C	Introduction to Biology: Biodiversity & the Tree of Life	
CHE 002A	General Chemistry	
CHE 002B	General Chemistry	
CHE 002C	General Chemistry	
CHE 004A	General Chemistry for the Physical Sciences & Engineering	
CHE 004B	General Chemistry for the Physical Sciences & Engineering	
CHE 004C	General Chemistry for the Physical Sciences & Engineering	
PHY 009A	Classical Physics	
PHY 009B	Classical Physics	
PHY 009C	Classical Physics	
Preparatory Subject Matter Subtotal		50-51
Depth Subject Matter		
<i>Computer Science Engineering</i>		
ECS 122A	Algorithm Design & Analysis	4
ECS 120	Theory of Computation	4
or ECS 122B	Algorithm Design & Analysis	
ECS 140A	Programming Languages	4
ECS 150	Operating Systems & System Programming	4
ECS 154A	Computer Architecture	4
Choose one:		4
ECS 132	Probability & Statistical Modeling for Computer Science	
MAT 135A	Probability	
STA 131A	Introduction to Probability Theory	
<i>Computer Science Electives</i>		
Choose a minimum of seven courses, including at least one Mathematics (MAT) or Statistics (STA) course. A minimum of four electives must be (ECS) courses: ¹		26-31
No course can count as both a required course and a Computer Science elective.		
Depth Subject Matter Subtotal		50-55
Total Units		100-106

¹ ECS 120-ECS 189 inclusive; ECS 193AB Discontinued (counts as one); one approved 3–5 unit course from ECS 192 or ECS 199; ECN 122; EEC 100, EEC 171, EEC 172, EEC 180A Discontinued, EEC 180B Discontinued; LIN 127, 177; MAT 100 Discontinued-MAT 189, excluding MAT 111; STA 131A, STA 131B, STA 141B, STA 141C STS 115; PSC 120.