

# 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
<b>Preparatory Subject Matter</b>		
<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
<b>Depth Subject Matter</b>		
<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: <sup>1</sup>		26-31
<b>No course can count as both a required course and a Computer Science elective.</b>		
Depth Subject Matter Subtotal		50-55
<b>Total Units</b>		<b>100-106</b>

<sup>1</sup> 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.