

# COMPUTER SCIENCE, BACHELOR OF SCIENCE

College of Letters & Science

## The Major Program

The Department of Computer Science administers two majors: Computer Science & Engineering (CSE), in the College of Engineering, and Computer Science (CS), in the College of Letters & Science. It also administers two minors: Computer Science, in the College of Letters & Science, and Computational Biology, in the College of Engineering. 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

D. Doty, K. Eiselt, M. Farrens, V. Filkov, P. Koehl, N. Matloff, C. Nitta, J. Porquet, P. Rogaway, K. Gage, J. Sison

## Graduate Study

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

Code	Title	Units
<b>Preparatory Requirements</b>		
Before declaring a major in Computer Science, students must complete the following courses with an overall UC Davis grade point average of at least 3.000; a grade of C- or better required in all courses:		
<i>Mathematics</i>		
MAT 021A	Calculus	4
MAT 021B	Calculus	4
<i>Computer Science Engineering</i>		
ECS 020	Discrete Mathematics For Computer Science	4
Choose an option:		4-8
(a)		
ECS 036A	Programming & Problem Solving	
ECS 036B	Software Development & Object-Oriented Programming in C++	
(b)		
ECS 034	Software Development in UNIX & C++	
<b>Total Units</b>		<b>16-20</b>

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

**No course can count as both a required course and a Computer Science elective.**

Depth Subject Matter Subtotal	50-55
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<b>Total Units</b>	<b>100-106</b>
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<sup>1</sup> ECS 120-189 inclusive; ECS 193AB (counts as one); one approved 3–5 unit course from ECS 192 or 199; ECN 122; EEC 100, 171, 172, 180A, 180B; LIN 127, 177; MAT 100-189, excluding MAT 111; STA 131A, 131B, 141B, 141C; STS 115; PSC 120.