Computer Science B.A. Degree 2020-2021 Curriculum Chart

CSE 20
Beginning Programming
Python

CSE 12/L
Comp. Systems
and Assembly Language

MATH 19A or
MATH 20A
Calculus

CSE 16
Engr Math Methods I
or
MATH 21
Linear Algebra

CSE 101
Abstract Data Types

CSE 30
Programming Abstractions: Python

CSE 13S∞ or
CSE 13E
Computer/ Embedded Systems and C Programming

MATH 19B or
MATH 20B
Calculus

Students must complete three courses from this Breadth list:
CSE 102 Introduction to Analysis of Algorithms
CSE 103 Computational Models
CSE 110A Compiler Design I
CSE 112 Comparative Programming Languages
CSE 115A Introduction to Software Engineering
CSE 120 Computer Architecture

One of:
CSE 130 Computer Systems Design
CSE 131 Operating Systems
CSE 132 Computer Security
CSE 138 Distributed Systems
CSE 140 Artificial Intelligence

Breadth Elective

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Students must complete three additional 5-credit (or more) upper division Computer Science and Engineering (CSE) elective courses selected from all 5-credit (or more) upper division CSE courses numbered below 170 or between 180-189. At least 1 Upper Division Elective must satisfy the Comprehensive Requirement.

- Students may substitute two of these upper division Computer Science and Engineering electives with courses from the list on the back of the chart.

DC Requirement
(See List Below)

Upper Division Computer Science Elective

Upper Division Computer Science Elective

Upper Division Computer Science Elective

Disciplinary Communication

Students of every major must satisfy that major’s upper-division Disciplinary Communication (DC) Requirement. The DC Requirement for the Computer Science B.A is satisfied by completing one of the following courses.

CSE 115A Introduction to Software Engineering
CSE 185E/185S Technical Writing for Computer S
Ψ CSE 195 Senior Thesis

DC courses cannot be used to satisfy any of the Upper Division Electives.

Comprehensive Requirement - Students have two options to fulfill the Computer Science exit requirement:
1. Pass one of the Capstone Courses (which can also fulfill an elective requirement, see Capstone Courses list →)
2. Successfully complete a Senior Thesis.

∞ CSE 13S is recommended for students pursuing a Computer Science major

Students have two options to fulfill the Computer Science exit requirement:
1. Pass one of the Capstone Courses (which can also fulfill an elective requirement, see Capstone Courses list →)
2. Successfully complete a Senior Thesis.

Many Capstone course options require additional prerequisites not already required in major requirements. Advance planning is crucial.

The capstone course can also satisfy an upper division elective.

CSE 110B Fundamentals of Compiler Design II
CSE 115C Software Design Project III
CSE 115D Software Design Project - Accelerated
CSE 118 Mobile Applications
CSE 121/L Microprocessor System Design / Lab
CSE 138 Distributed Systems
CSE 140 Artificial Intelligence
CSE 143 Introduction to Natural Language Processing
CSE 144 Applied Machine Learning
CSE 156/L Network Programming / Lab
CSE 157 Internet of Things
CSE 160/L Introduction to Computer Graphics / Lab
CSE 161/L Introduction to Data Visualization / Lab
CSE 162/L Advanced Computer Graphics and Animation / Lab
CSE 163 Data Programming for Visualization
CSE 168 Introduction to Augmented Reality and Virtual Reality
CSE 181 Database Systems II
CSE 183 Web Applications
CSE 184 Data Wrangling and Web Scraping
CMPM 172 Game Design Studio III
ECE 118/L Introduction to Mechatronics / Lab

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Computer Science B.A. Degree
2020-2021 Curriculum Chart

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<th>Fall</th>
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- All students admitted to a School of Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade.
- Courses in which you receive a grade of C-, D+, D, or D- earn credit toward graduation, but cannot be used to satisfy a major requirement or a general education requirement, and cannot satisfy a prerequisite for another course.
- Shaded boxes represent foundation courses. Major qualification requirements for this major can be found at:
  https://undergrad.soe.ucsc.edu/major-qualification
- Many graduate courses can also be used to satisfy electives; however, students will need instructor and department approval.
- The School of Engineering has different major declaration deadlines than the UCSC Academic/Administrative calendar. Our deadlines and process can be found on:
  http://undergrad.soe.ucsc.edu/declare-your-major

Upper Division Elective List
- Any 5-credit upper division course offered by the Baskin School of Engineering except those numbered 191 through 194 and 196 through 199.
- (CMPM and AM courses strongly recommended.)
- ARTG 118 Character Creation for Video Games
- EART 124 Modeling Earth’s Climate
- EART 125 Statistics and Data Analysis in the Geosciences
- EART 172/OCEA 172 Geophysical Fluid Dynamics
- ECON 100M Intermediate Microeconomics, MathIntensive
- ECON 100N Intermediate Macroeconomics, MathIntensive
- ECON 101 Managerial Economics
- ENVIS 115A/L Geographic Information Systems and Environmental Applications
- FILM 170A Fundamentals of Digital Media Production
- LING 112 Syntax I
- LING 113 Syntax II
- LING 118 Semantics III
- LING 125 Foundations of Linguistic Theory
- MATH 110 Introduction to Number Theory
- MATH 115 Graph Theory
- MATH 116 Combinatorics
- MATH 117 Advanced Linear Algebra
- MATH 118 Advanced Number Theory
- MATH 134 Cryptography
- MATH 145/L Introductory Chaos Theory / Lab
- MATH 148 Numerical Analysis
- MATH 160 Mathematical Logic I
- MATH 161 Mathematical Logic II
- MUSC 123 Electronic Sound Synthesis
- MUSC 124 Intermediate Electronic Sound Synthesis
- MUSC 125 Advanced Electronic Sound Synthesis
- PHYS 115 Computational Physics
- PHYS 150 Quantum Computing

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