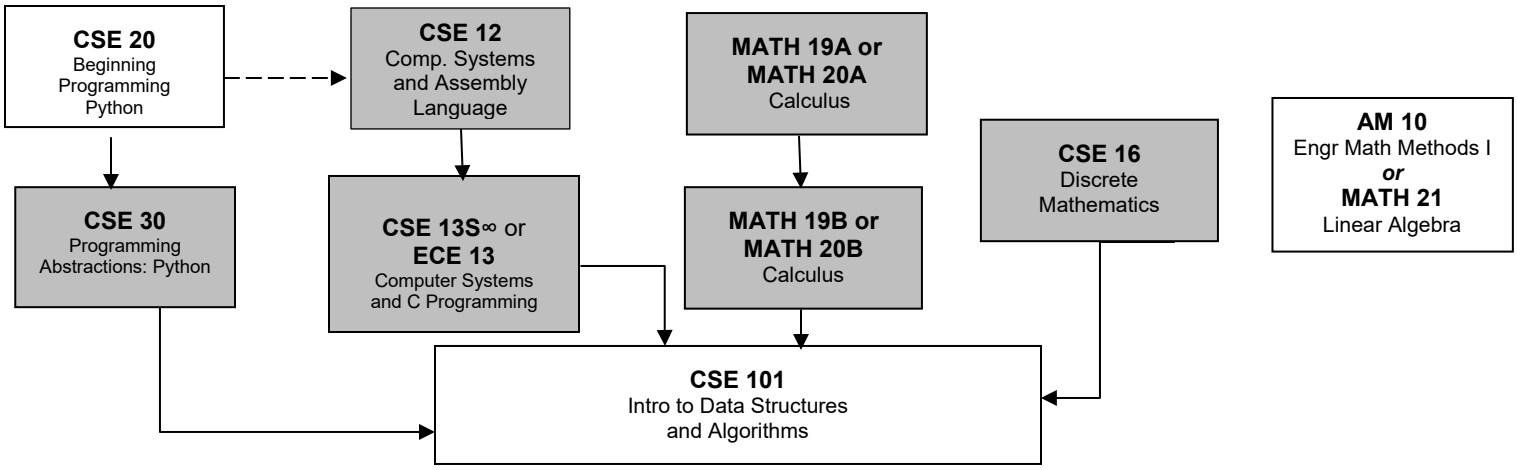
Computer Science B.A. Degree
2021-2022 Curriculum Chart



Students must complete *three* courses from this Breadth list:

CSE 102 Introduction to Analysis of Algorithms	CSE 120 Computer Architecture	CSE 142 Machine Learning
CSE 103 Computational Models	CSE 130 Computer Systems Design	CSE 143 Natural Language Processing
CSE 110A Compiler Design I	CSE 132 Computer Security	CSE 144 Applied Machine Learning
CSE 112 Comparative Programming Languages	CSE 138 Distributed Systems	CSE 160/L Computer Graphics
CSE 115A Introduction to Software Engineering	CSE 140 Artificial Intelligence	CSE 180 Database Systems I

Breadth Elective	Breadth Elective	Breadth Elective
_____	_____	_____

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 Science and Engineering
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.

Capstone Courses

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 121 Embedded System Design
CSE 134 Embedded Operating Systems
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 Introduction to Mechatronics

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

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Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

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 and CSE courses numbered 185E, 185S, and 115A.

(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, Math Intensive
- **ECON 100N** Intermediate Macroeconomics, Math Intensive
- **ECON 101** Managerial Economics
- **ENVS 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

- **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