Computer Science B.A. Degree
2024-2025 Curriculum Chart

Lower Division Programming Courses

CSE 20
Beginning
Programming Python

CSE 12
Computer Systems &
Assembly Language
Prerequisites: CSE 20 or CSE 30

CSE 30
Programming
Abstractions:
Python
Prerequisites: CSE 20; and Math 19A or Math placement score of 400 ot more

Math Courses

MATH 19A or MATH 20A
Calculus I
Prerequisites: Math Placement score of 400 or more or Math 3

CSE 40
Machine Learning Basics
Prerequisites: CSE 30 and Math 19B

Math 19B or Math 20B
Calculus II
Prerequisites: Math 19A

CSE 16
Applied Discrete Mathematics
Prerequisites: Math 19A or Math 19B

AM 10
Engr. Math Methods I
Prerequisites: Math Placement score of 400 or higher or Math 3

OR

MATH 21
Linear Algebra
Prerequisites: Math 19A

One of the following

CSE 13S
Computer Systems and C Programming
Prerequisites: CSE 12

AND

CSE 101
Intro to Data Structures & Algorithms
Prerequisites: CSE 12, CSE 16, CSE 13S, and CSE 30; Math 19B or 20B

OR

CSE 101P
Intro to Data Structures & Algorithms in Python
Prerequisites: CSE 16, CSE 20, CSE 30, and Math 19B

Students must complete **three** courses from either breadth list

Breadth courses not requiring CSE 101:
CSE 101M Mathematical Thinking for Computer Science
CSE 102 Introduction to Analysis of Algorithms
CSE 103 Computational Models
CSE 112 Comparative Programming Languages
CSE 114A Foundations of Programming Languages
CSE 118 Mobile Applications
CSE 120 Computer Architecture
CSE 140 Artificial Intelligence
CSE 142 Machine Learning
CSE 143 Introduction to Natural Language Processing
CSE 144 Applied Machine Learning: Deep Learning
CSE 150 Introduction to Computer Networks
CSE 183 Web Applications
CSE 184 Data Wrangling and Web Scraping
CSE 186 Full Stack Web Development I

Breadth courses requiring CSE 101:
CSE 110A Fundamentals of Compiler Design I
CSE 130 Principles of Computer Systems Design
CSE 132 Computer Security
CSE 134 Embedded Operating Systems
CSE 138 Distributed Systems
CSE 160 Introduction to Computer Graphics
CSE 180 Database Systems I

Breadth Elective 1:
_____

Breadth Elective 2:
_____

Breadth Elective 3:
_____

Students must complete three additonal 5-credit (or more) upper division Computer Science and Engineering (CSE) elective courses selected from all 5-credit (or more) upper didvision CSE courses numbered between 100-189. **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

Disciplinary Communication Requirement

DC Requirement
(See List Below)
_____

Upper Division Electives

Upper Division Elective 1:
_____

Upper Division Elective 2:
_____

Upper Division Elective 3:
_____

Disciplinary Communication
Students of every major must satisfy that majors upper-division Disciplinary Communication (DC) Requirement. The DC Requirement for the CS BA is satisfied by completing one of the following courses:
CSE 115A Introduction to Software Engineering
CSE 185S/CSE185E Technical Writing for Computer Science and Engineering
*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 the Capstone Courses list on the back of this page)
2. Successfully complete a Senior Thesis*

*CSE 195 cannot count as a DC Requirement and a capstone

Computer Science B.A. Degree
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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 Baskin Engineering** except those numbered 191 through 194 and 196 through 199 and CSE courses numbered 185E, 185S, and 115A. (AM, CMPM, and STAT 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 with Exercises
- **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 140** Industrial Mathematics
- **MATH 145/L** Introductory Chaos Theory
- **MATH 160** Mathematical Logic I
- **MATH 161** Mathematical Logic II
- **MUSC 123A** Electronic Music: Synthesis & Composition I
- **MUSC 123B** Electronic Music: Synthesis & Composition II
- **MUSC 123C** Electronic Music: Synthesis & Composition III
- **PHYS 115** Computational Physics
- **PHYS 150/CSE 109** Quantum Computing

Capstone Courses:

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

The Capstone course <u>can</u> also satisfy and Upper Division CSE Elective or Breadth Elective requirement.

- **CSE 110A** Fundamentals of Compiler Design I
- **CSE 115C** Software Design Project III
- **CSE 115D** Software Design Project - Accelerated
- **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 145** Introduction to Data Mining
- **CSE 156/L** Network Programming / Lab
- **CSE 157** Internet of Things
- **CSE 160** 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
- **CSE 187** Full Stack Web Development II
- **CMPM 172** Game Production Studio