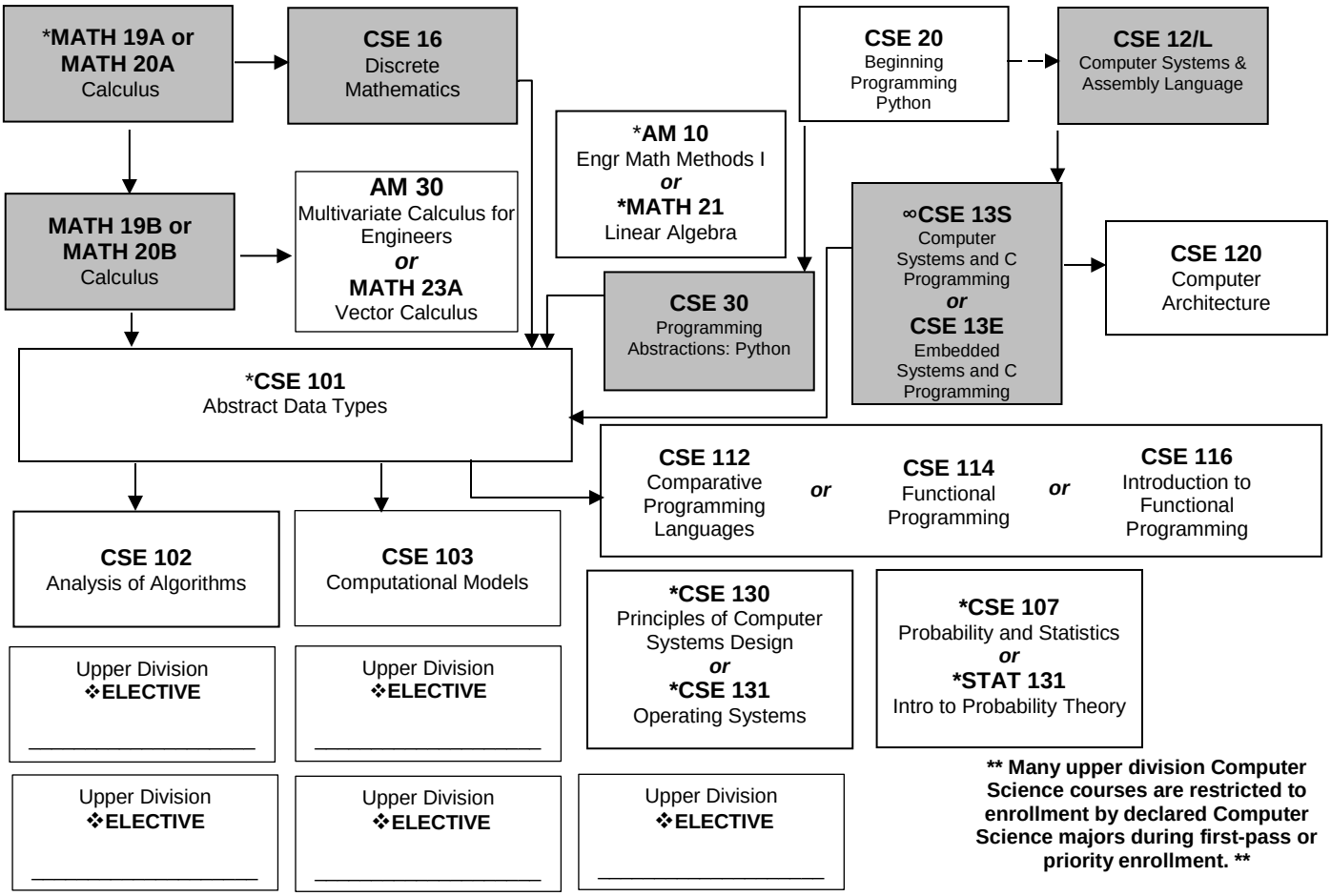
Computer Science B.S. Degree
2019-2020 Curriculum Chart



**** Many upper division Computer Science courses are restricted to enrollment by declared Computer Science majors during first-pass or priority enrollment. ****

The DC and Capstone courses can count towards the 5 required upper division electives.

Disciplinary Communication Requirement (DC)

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

CSE 115A Introduction to Software Engineering
CSE 104 & CSE 104W** Computability and Computational Complexity
CSE 185S Technical Writing and Communication in CS
Ψ CSE 195 Senior Thesis
♦CSE 185E Technical Writing for CE

Capstone Courses

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

CSE 110B Fundamentals of Compiler Design II
CSE 115C Software Design Project III
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 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

* Course has additional prerequisites. Please consult UCSC General Catalog course descriptions.
∞ CSE 13S is recommended for students pursuing a Computer Science major
** In order for these courses to satisfy the DC requirement, the W section must be completed.
♦ Enrollment restricted to majors in Computer Engineering, Bioengineering, Bioinformatics, Robotics Engineering, or Network and Digital Technology, or by permission of instructor.

Ψ CSE 195 can satisfy both the DC and Capstone requirement, and 1 upper division elective.

❖Upper Division Electives: 5 credit (or more than 5 credit) upper-division computer science or computer engineering (CSE) courses with a course number below 170, or between 180-189, or CSE 195, or courses from the Computational Media electives on the back of this chart. Up to *two* of these electives may be replaced by upper-division mathematics electives listed on the back.

Comprehensive Requirement - Students have two options to fulfill the Computer Science exit requirement:
1. Pass one of the Capstone Courses
2. Successfully complete a Senior Thesis.

Disciplinary Communication Requirement – Students have two options to fulfill the DC requirement:
1. Pass one of the Disciplinary Communication Courses
2. Successfully complete a Senior Thesis

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Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Mathematics Electives List

AM 114 Introduction to Dynamical Systems
AM 147 Computational Methods and Applications
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
One of the following combinations: [**PHYS 5A** and **PHYS 5B**] OR [**PHYS 5A** and **PHYS 5C**] OR [**PHYS 6A** and **PHYS 6B**] OR [**PHYS 6A** and **PHYS 6C**]***
STAT 132 Classical and Bayesian Inference

Computational Media Electives List

CMPM 120 Game Development Experience
CMPM 131 User Experience for Interactive Media
CMPM 146 Game AI
CMPM 163 Game Graphics and Real-Time Rendering
CMPM 164/L Game Engines / Lab
CMPM 171 Game Design Studio II
CMPM 172 Game Design Studio III

- **All courses being applied to requirements for the Computer Science major must be taken for a letter grade. Grades of P will not count toward major requirements.**
- 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 major qualification courses. The full 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**

*** Physics courses have co-requisite labs required for enrollment. These associated labs are not part of the Computer Science B.S. major requirements.

Student Name:

Staff Advisor Signature: