Mathematics-Computer Science

Students may opt to pursue an interdisciplinary Bachelor of Science degree in Math-Computer Science, a concentration administered cooperatively between the mathematics and computer science departments. Course requirements include math- and systems-oriented computer science courses, as well as computational courses in applied math. Students must identify a series of electives that cohere around a common theme. As with other concentrations offered by the Computer Science department, students have the option to pursue the professional track of the ScB program in Mathematics-Computer Science.

Requirements for the Standard Track of the Sc.B. degree.

Prerequisites

Three semesters of Calculus to the level of MATH 0180, MATH 0200, or MATH 0350		3
MATH 0520	Linear Algebra	1
or MATH 0540	Linear Algebra With Theory	
or CSCI 0530	Coding the Matrix: An Introduction to Linear Algebra for Computer Science	

Core Courses

MATH 1530	Abstract Algebra	1
Select one of the following series:		2
Series A		
CSCI 0150 & CSCI 0200	Introduction to Object-Oriented Programming and Computer Science and Program Design with Data Structures and Algorithms	
Series B		
CSCI 0170 & CSCI 0200	Computer Science: An Integrated Introduction and Program Design with Data Structures and Algorithms	
Series C		
CSCI 0190	Accelerated Introduction to Computer Science (and an additional CS course numbered 200 or above not otherwise used to satisfy a concentration requirement; a Foundations course, or a 1000-level CS course)	
Series D [1]		
CSCI 0111 & CSCI 0200	Computing Foundations: Data and Program Design with Data Structures and Algorithms	
Foundations Courses: Two courses, touching two different Foundations areas:		2
a. Algorithms/Theory Foundations		
CSCI 0500	Data Structures, Algorithms, and Intractability: An Introduction	
b. AI/Machine Learning/Data Science Foundations.		
CSCI 0410	Foundations of AI	
c. Systems Foundations. Concentration credit for only one of 300/330		
CSCI 0300	Fundamentals of Computer Systems	
or CSCI 0320	Introduction to Software Engineering	
or CSCI 0330	Introduction to Computer Systems	
Three 1000-level Mathematics courses		3
Three courses in Computer Science at the 1000-level or higher. One of these can be an additional 100-level Foundations course or a CSCI non-technical course, as defined by the concentration handbook.		3
Three additional courses different from any of the above chosen from Mathematics, Computer Science, Applied Mathematics, or related areas [4]		3
A capstone course in Computer Science or Mathematics [5]		1
Total Credits		**19**

[1] Students wishing to go directly from CSCI 0111 to CSCI 0200 will need to successfully complete additional exercises to receive an instructor override code for CSCI 0200.

[2] These must be CSCI courses at the 1000-level or higher. Credit will only be given for one of CSCI 410, CSCI 1410, CSCI 1411, and only one credit for CSCI 300, CSCI 330. See current handbook for list. https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-handbook/

[3] Concentration credit will be given for only one of APMA 1650, APMA 1655, and CSCI 1450. These must be approved by a concentration advisor.

[4] A one-semester course, taken in the student's last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic in depth. A senior thesis which involves two semesters of work may count as a Capstone.

Course-based capstones are currently only available through CS. Approved capstone courses and instructions may be found in the CS concentration handbook (https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-handbook/)

Requirements for the Professional Track of the Sc.B. degree.

The requirements for all undergraduate professional tracks within concentrations are standardized and additional information can be found here:

https://bulletin.brown.edu/undergradproftrack/