

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 (<http://www.cs.brown.edu/ugrad/concentrations/professional.track.html>) 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	Honors Linear Algebra	
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 0160	Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures	
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Series B

CSCI 0170 & CSCI 0180	Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction	
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Series C

CSCI 0190	Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level CS course, or a 1000-level CS course)	
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CSCI 0320 or CSCI 0330 Introduction to Software Engineering or Introduction to Computer Systems 1

CSCI 0220 or CSCI 1010 Introduction to Discrete Structures and Probability or Theory of Computation 1

Three 1000-level Mathematics courses 3

Three advanced courses in Computer Science ^{1,2} 3

Three additional courses different from any of the above chosen from Mathematics, Computer Science, Applied Mathematics, or related areas ³ 3

A capstone course in Computer Science or Mathematics ⁴ 1

Total Credits 19

¹ These courses must be at the 1000-level or higher. The three courses must include a pair of courses with a coherent theme. A list of pre-approved pairs may be found at the approved-pairs web page (<http://cs.brown.edu/ugrad/concentrations/approvedpairs.html>). You are not restricted to the pairs on this list, but any pair not on the list must be approved by the director of undergraduate studies.

² Note: CSCI 1010 and 1450 may be used either as a math-oriented intermediate courses or as advanced courses. CSCI 1010 was formerly known as CSCI 510: they are the same course and hence only one may be taken for credit. CSCI 1450 was formerly known as CSCI 450: they are the same course and hence only one may be taken for credit. Applied Math 1650 or 1655 may be used in place of CSCI 1450. However, concentration credit will be given for only one of Applied Math 1650, 1655, and CSCI 1450.

³ 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, to produce a culminating artifact such as a paper or software project.

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

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:

- Which courses were put to use in your summer's work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.

Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Helvetica was used instead of Arial.

The editor may contact Leepfrog for a draft with the correct fonts in place.