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
MATH 0520 Linear Algebra
or MATH 0540 Honors Linear Algebra

Core Courses
MATH 1530 Abstract Algebra
Select one of the following series:

Series A
CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
& CSCI 0160 Introduction to Algorithms and Data Structures

Series B
CSCI 0170 Computer Science: An Integrated Introduction
& CSCI 0180 Computer Science: An Integrated Introduction

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

CSCI 0320 Introduction to Software Engineering
or CSCI 0330 Introduction to Computer Systems
CSCI 0220 Introduction to Discrete Structures and Probability
or CSCI 0510 Models of Computation

Three 1000-level Mathematics courses
Three advanced courses in Computer Science
Three additional courses different from any of the above chosen from Mathematics, Computer Science, Applied Mathematics, or related areas
A capstone course in Computer Science or Mathematics

Total Credits

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 These must be approved by a concentration advisor.

3 A one-semester course, normally 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.