Applied Mathematics-Computer Science

The Sc.B. concentration in Applied Math-Computer Science provides a foundation of basic concepts and methodology of mathematical analysis and computation and prepares students for advanced work in computer science, applied mathematics, and scientific computation. Concentrators must complete courses in mathematics, applied math, computer science, and an approved English writing course. While the concentration in Applied Math-Computer Science allows students to develop the use of quantitative methods in thinking about and solving problems, knowledge that is valuable in all walks of life, students who have completed the concentration have pursued graduate study, computer consulting and information industries, and scientific and statistical analysis careers in industry or government. This degree offers a standard track and a professional track.

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

Prerequisites - two semesters of Calculus, for example

MATH 0090 & MATH 0100
and Introductory Calculus, Part II

MATH 0170
Advanced Placement Calculus

Concentration Requirements (17 courses)

Core-Math:

MATH 0180
Intermediate Calculus 1

or MATH 0350
Honors Calculus

MATH 0520
Linear Algebra 1

or MATH 0540
Honors Linear Algebra

or CSCI 0530
Directions: The Matrix in Computer Science

Core-Applied Mathematics:

APMA 0350
Applied Ordinary Differential Equations 1

APMA 0360
Applied Partial Differential Equations I 1

APMA 1170
Introduction to Computational Linear Algebra 1

or APMA 1180
Introduction to Numerical Solution of Differential Equations

Core-Computer Science:

Select one of the following Series:

Series A

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

Series B

CSCI 0170 & CSCI 0180
Computer Science: An Integrated Introduction and 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 course)

Select three of the following intermediate-level courses, one of which must be math-oriented and one systems-oriented:

CSCI 0220
Introduction to Discrete Structures and Probability (math)

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.