Requirements for the Sc.M. Degree in Computer Science
August 2014

The requirements consist of a basic component and an advanced component. All courses must be at the 1000 level or higher. All courses must be completed with a grade of B or better.

The courses in a student’s program must be approved by the director of the master’s program (as well as by the student’s advisor).

Basic Component

The basic component consists of six courses. None of these courses may be reading and research courses (such as CSCI 2980).

The six courses are chosen as follows:

Two must be CS courses that form a coherent major. Examples of such majors appear on our web page.

One must be a CS course in an area that’s substantially different from the major. Examples appear on our web page.

The three additional courses must be in CS or related areas.

Advanced Component

The advanced component requires the student to complete one of the following six options. Reading and research courses (such as CSCI 2980) may be used as part of options 1, 2, 3, and 4, but not as part of options 5 and 6. An “advanced course,” as used below, is either a 2000-level CS course or a 1000-level CS course that includes a master’s supplement. Master’s supplements are nominally half-credit courses, but students may do the work of these courses without officially registering for them. Examples of such supplements are CSCI 1234 (supplementing 1230), CSCI 1690 (supplementing 1670), and CSCI 1729 (supplementing 1730).

“Internships,” as used below, must be approved by the student’s advisor and are paid work in the area of the student’s master’s studies. They may be full- or part-time. A full-time internship must last at least two months but no more than four months. A part-time internship must last at least four months but no more than six months. Normally the internship will be performed between the student’s 2nd and 3rd semester in the program.

The six options are:

(1) Complete a thesis supervised by her or his advisor and approved by a committee consisting of the advisor and at least one other faculty member.

(2) Complete a thesis supervised by her or his advisor and approved by a committee consisting of the advisor and at least one other faculty member, and complete an internship.

(3) Complete a project supervised and approved by her or his advisor.
(4) Complete a project supervised and approved by her or his advisor, and complete an internship.

(5) Complete two advanced courses.

(6) Complete two advanced courses and complete an internship.

**Rationale**

Students entering the master’s program typically have one of two goals: they intend to pursue research careers in computer science and are preparing themselves to enter Ph.D. programs, or they intend to become professional computer scientists and pursue careers in industry. In both cases, students should take collections of courses that not only give them strength in particular areas of computer science, but also include complementary areas that familiarize them with other ways of thinking about the field. For example, a student whose interests are in the practical aspects of designing computer systems should certainly take courses in this area, but should also be exposed to the mindset of theoretical computer science. In a rapidly changing discipline, there is much cross-fertilization among areas and students should have some experience in doing advanced work in areas not directly related to their own.

A student whose goal is a research career should become involved as quickly as possible with a research group as part of their master’s studies, and demonstrate and learn about research by participating in it. The resulting thesis or project report will serve to establish her or his suitability for entering a Ph.D. program.

A student whose goal is to be a professional computer scientist should have some professional experience as part of her or his preparation. A certain amount of basic coursework is required before a student can qualify for a pedagogically useful internship. Students with limited experience in computer science should take a few advanced computer science courses before embarking on an internship. Other students, particularly those whose undergraduate degrees were at Brown, will have had internship experiences while undergraduates. Internships provide insights for subsequent courses and project work at Brown. Students without such experiences are at a disadvantage with respect to their peers. Thus we strongly encourage students who have not had such experience to choose one from options 2, 4, or 6, for which internships are required.

Note that these internships are not courses and the work is not evaluated as it would be for a course. Students’ advisors will assist them in choosing and obtaining internships, but it is up to students themselves to insure that they get as much benefit as possible from their experiences. They must be able to take advantage of these experiences while completing their master’s projects — we expect as high-quality work from them as we do from students who entered the program with prior internship experiences.

Some of our students are pursuing a master’s on a part-time basis while concurrently working in the computer industry. Such students often are working as part of teams in their companies on major projects and don’t need additional project experience at Brown. What is most important for them is to take additional advanced courses to extend their expertise in their areas of interest. These students, rather than complete a project at Brown, may elect to take two such courses instead.