

A Five-Year BS-MS Degree Program in Computer Science

1. Rationale

The Department of Computer Science proposes the establishment of a five-year program that combines a BS in Computer Science with an MS (Master with thesis) in Computer Science. Students enrolled in the College of Engineering Curriculum in Computer Science who maintain a *superior academic performance*, as described below, will be eligible to apply for this program. Some reasons for creating such a program are as follows:

- ?? The existence of a combined program will encourage good students to plan early for graduate school.
- ?? The combined program will provide a smoother integration of bachelor's and master's studies than is typically achieved by a student who follows separate BS and MS programs.
- ?? The combined program will enable the department to identify its best students early in their academic careers and will constitute a mechanism for attracting them to continue in graduate school, perhaps on to a PhD.
- ?? The combined program will send much needed, qualified master's graduates into the workplace one year sooner, on average, than is the case with students who earn separate degrees.

The requirements for the BS and MS components of the combined program will remain the same as for the existing BS and MS degree programs. However, three 300-level courses, as described below, which are currently required for both BS and MS programs, will, in the combined program, earn *graduate credit* units toward the MS degree and *proficiency credit* toward the BS degree, thereby enabling the two degrees to fit comfortably into a five-year span.

2. Program requirements

The existing BS program in Computer Science comprises 128 hours of coursework, made up as follows:

- A. 26 hours of "core" CS 100- and 200-level courses;
- B. 18-21 hours of Mathematics;
- C. 16 hours of basic science;
- D. 12 hours of an "Application Sequence";
- E. 22-25 hours of General Education;
- F. 10-16 hours of free electives.
- G. 18 hours of "advanced" CS 300-level courses, as follows:
 - G1. CS 321 Programming Languages and Compilers

- G2. CS 323 Operating System Design
- G3. CS 331 or CS 333 (Computer Architecture)
- G4. CS 373 or CS 375 (Theory of Computation)
- G5. Two more 300-level courses to specialize in some field of computer science.

The existing MS program in Computer Science comprises eight units of coursework and thesis research, made up as follows:

- A. 2 1/4 - 3 units of "distribution coursework" consisting of one course (3/4 - 1 unit) chosen from each of three specified lists in the areas of:
 - A1. Software (including CS 321 and CS 323);
 - A2. Computer Architecture (including CS 331 and CS 333); and
 - A3. Theory (including CS 373 and CS 375);
- B. 3 or more units of 400-level coursework, chosen in accordance with the rules of the Graduate College;
- C. Elective 300- or 400-level coursework to bring the total up to 7 units;
- D. Completion of 1 unit of an approved master's thesis.

The crux of the combined program is to apply completion of item A in the MS program requirements as proficiency (waiver) for part of item G in the BS program requirements; as follows:

- Item A1 of the MS program satisfies item G1 or G2 of the BS program, depending on the software course taken as item A1 requirement;
- Item A2 of the MS program satisfies item G3 of the BS program; and
- Item A3 of the MS program satisfies item G4 of the BS program.

Thus, a student in the combined program will obtain *proficiency credit* (but no credit hours) for three courses (one in each of software, architecture, and theory) toward the BS degree and *units credit* toward the MS degree. Like all graduate students, students in the combined program have the option of taking these courses for 3/4 or 1 unit of credit.

With approval from their academic advisors, students in the combined program can take the three distribution courses (A1, A2, A3) at any time after their admission into the combined program, preferably during their senior year. By doing so they would be left with only 5 - 5 3/4 units for the remaining MS degree requirements, which can be readily accomplished in the fifth year.

Students in the combined program would be required to complete at least 120 hours of BS courses, *exclusive of the proficiency-credit* they receive for the "distribution coursework" part of the MS component of the program.

As a result of these requirements and options, students in the combined program would complete 129-132 hours, including proficiency credit hours for part of the

item G requirement, for their BS degree and at least 8 units of graduate credit for their MS degree.

3. Admission to the Program

- ?? Students in the BS in computer science program who have an overall grade point average (GPA) of at least 3.5 may apply to the combined program.
- ?? The application may be made during the first or second semester of the junior year or the first semester of the senior year, subject to the normal graduate application deadlines (currently September 1st for Spring entry and December 20th for Summer or Fall entry)
- ?? In accordance with the usual procedures of graduate applications, the applicants must also submit three letters of recommendation and a statement of background and purpose.
- ?? The GRE General Test is *not* required.
- ?? The departmental admissions committee will review the applications, and successful applicants will be *provisionally* admitted to the combined program, effective in the semester following that of their application. At that time these applicants will be assigned a **graduate** academic adviser to assist them in planning the remainder of their program.
- ?? Students admitted to the combined program must maintain an overall GPA of 3.5 through the end of the junior year and a GPA of 3.0 thereafter, in order to remain in the program.

4. Program Implementation

- ?? A separate curriculum code will be established for undergraduates who have been admitted to the joint degree program.
- ?? Students admitted to the combined program will receive their BS degrees once they have earned 120 hours in the BS program, *exclusive of the proficiency-credit* they receive for the three MS courses in software, architecture and theory, and have completed the 3 distribution coursework requirement of the MS degree. At this point they will be formally admitted to the graduate program. Like regular MS students, they must maintain a graduate GPA of 3.0 in order to remain in the master's part of the combined program.

- ?? Students must satisfy the university's minimum residence requirements of the three years' registration as an undergraduate and one semester as a graduate student.
- ?? Undergraduates in the joint degree program may register for graduate courses for unit credit (with permission), even if they are more than 10 hours from completing the baccalaureate degree.
- ?? Tuition is assessed according to the student's curriculum and status as an undergraduate or graduate student.
- ?? Students who are admitted to the combined program will be eligible for graduate fellowships and assistantships.
- ?? Students who choose to drop out of the combined program or are removed from the program because they fail to meet any of its requirements, would be dealt with as follows:
- If this occurs before the BS degree is conferred, they revert back to the regular BS program. Any courses they have taken for unit credit would be credited as undergraduate hours.
 - Otherwise, they will be given non-degree graduate credit for any graduate courses they have taken, other than the ones that will be used to satisfy undergraduate requirements.
 - Students admitted to the combined program are eligible to apply for the PhD. program. If admitted, their MS degree will count as Stage 1 of the PhD. program, as is customarily the case.