

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

EP.02.29

Office of the Provost and Vice Chancellor
for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820



March 6, 2002

R. Linn Belford, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Belford:

Enclosed are copies of a proposal from the Graduate College for a Five-year combined B.S./M.S. program in Computer Science.

This proposal has been approved by the Graduate College Executive Committee; it now requires Senate review.

Sincerely,

A handwritten signature in black ink that reads "Keith A. Marshall".

Keith A. Marshall
Assistant Provost

KAM/mll

C. Livingstone
D. Daniel
M. Harandi
N. Few
D. Padua
M. Snir
R. Wheeler

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Graduate College
204 Coble Hall
801 South Wright Street
Champaign, IL 61820-6210



March 4, 2002

Keith Marshall
Assistant Provost
207 Swanlund
MC-304

Dear Keith:

On behalf of the Graduate College Executive Committee, I am pleased to inform you that the Graduate College has approved the following:

Five-year combined B.S./M.S. program in Computer Science

Juniors and first-semester seniors with a grade-point average of at least 3.5 would be eligible to apply for the combined program. Successful applicants will be provisionally admitted to the combined degree program, effective in the semester following that of their application. These students will then take *for graduate credit* three core courses that are common to both the B.S. and M.S. degree requirements. This means that these students will be required to perform and be graded at the more advanced level of graduate students in those courses. Once these courses have been successfully completed and all other undergraduate degree requirements have been met, students will be formally admitted to the graduate program in computer science. In the combined program, the M.S. degree requirements are exactly the same as the current M.S. degree requirements. Although the undergraduate portion of the program would be reduced by the credit earned for the three core courses, students would not be awarded the B.S. until all of the requirements for the combined program had been met. Students in the combined program would earn at least eight units of graduate credit and at least 120 hours of undergraduate credit.

The proposal to establish this program was first considered at the October 26, 2001 meeting of the Program Subcommittee of the Graduate College Executive Committee. It was discussed at several subsequent meetings. The Department of Computer Science made significant revisions to the proposal, based on the recommendations of the Program Subcommittee. The Program Subcommittee approved the proposed program on January 14, 2002. The revised proposal was formally approved by the faculty of the Department of Computer Science on January 28, 2002. The revised proposal was formally approved by the Executive Committee of the College of Engineering on February 12, 2002.

There was extensive discussion of the proposed program at the Graduate College Executive Committee on February 20, 2002. The program was approved by a vote of 7 to 4. Concerns were expressed about "double-counting" of credit and about reducing the credit required for the undergraduate portion of the degree. It is important to note that the program as now structured would prohibit the awarding of a "stand-alone" B.S. degree with only 120 hours having been earned. Students in the combined program would simultaneously be awarded the B.S. and M.S. degrees once all of the requirements for the combined program had been met. Students who chose to drop out of the combined program or were removed from the program because they failed to meet any of its requirements would return to the "regular" B.S. program. The graduate credit that they have earned for the three core courses would then be converted to undergraduate credit and applied to

Keith Marshall
Proposed B.S./M.S. in Computer Science
March 4, 2002
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the B.S. degree. Such students would receive the B.S. degree with a minimum of 128 hours earned and satisfaction of all B.S. degree requirements.

It is our understanding that the proposed program must be approved by the Senate, Senates Conference, and Board of Trustees before it can be implemented. The Department of Computer Science believes that this program will enhance its competitive position in recruiting and retaining excellent students, and is eager to implement this program as soon as possible.

Please let me know if you need additional information.

Sincerely,



Lamar Riley Murphy
Associate Dean

Enclosures

c: David Daniel
 Mehdi Harandi
 Nora Few
 David Padua
 Marc Snir
 Richard Wheeler

Memorandum

Lamar Murphy, Associate Dean, Graduate College

CC:

From: David Padua, Vice Chair, Executive Committee of College of
Engineering

Date: 2/20/2002

Re: Combined BS/MS degree program in Computer Science

I am pleased to inform you that, during its February 12th meeting, the Executive Committee unanimously endorsed the modifications to the combined BS/MS program in Computer Science.

The Executive Committee requested that I convey its strong endorsement of the combined BS/MS program and its conviction that the program is of great importance for the future of the College of Engineering. In fact, on February 2000, the Executive Committee approved a set of guidelines for other departments in the College of Engineering based on the Computer Science model. Already, one other combined program has been developed and is now under review by the Executive Committee.

I assume the motivation for the combined program was presented by the Department of Computer Science to the Executive Committee of the Graduate College and, therefore, it is not necessary for us to elaborate on this matter. But please let me know if additional information is needed about combined BS/MS programs and our views on them.

Date: Tue, 29 Jan 2002 10:25:06 -0600
From: Harandi <harandi@cs.uiuc.edu>
X-Mailer: Mozilla 4.76 [en] (Windows NT 5.0; U)
X-Accept-Language: en
To: Lamar Murphy <lrmurphy@uiuc.edu>
CC: harandi mehdi t <harandi@dcs-server1.cs.uiuc.edu>,
padua david a <padua@dcs-server1.cs.uiuc.edu>,
gilbert gennifer <ggilbert@uiuc.edu>
Subject: Re: Recommended changes to combined BS/MS proposal

Dear Lamar,

In their 1/28/02 meeting, the faculty of computer science unanimously approved the changes suggested by the Program Subcommittee of the Graduate College Executive Committee regarding our proposed 5 year combined BS/MS program, as outlined in your message of 1/26/02. Enclosed are two word documents. The first is the document you forwarded to us with my minor additions and suggested changes, appearing in blue. The second is the cleaned up version with all highlighting, change tracking and underlining removed.

With many thanks for your continued support and hard work,

Best regards,

- Mehdi

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 (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, and will continue to provide the same breadth and depth of coverage for all the required courses of the existing 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 early introduction to research, hence extending their horizon and hopefully attracting them to continue in graduate school, perhaps on to a PhD. Most faculty would be more willing to include undergraduate students into their research groups if they know these students will continue for at least an MS degree.
- The combined program will send much needed, qualified master's graduates into the workplace six months to one year sooner, on average, than is the case with students who earn separate degrees.
- The combined program will likely attract superior high school graduates to our department, whom we would otherwise lose to peer institutions with similar combined BS-MS degrees.

The MS component of the combined program is exactly the same as the current MS program. The BS component of the combined program includes the same required courses as the current BS program, but consists of a minimum of 120 hours rather than 128 hours. This can be accomplished without sacrificing quality because three 300-level courses, as described below, are currently required for both the BS and the MS. In the combined program these courses will only be taken once, and students will not be required to take other courses to replace them. Students will take these classes in their third or fourth year, while still classified as undergraduate students, but will earn graduate credit that will be counted toward the MS degree, thereby

enabling the two degrees to fit comfortably into a five-year span. In the proposed combined program students will be required to take these three courses at the graduate level, i.e. one that requires a higher standard of work with, typically, more assignments and/or projects than at the undergraduate level. Considering the caliber and self-motivation of students admitted to the combined program, the reduction in total BS hours will have no meaningful effect on their education.

2. Program Requirements

The 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.

As can be seen from these listings, items A1, A2 and A3 of the MS program are the same as items G1/G2, G3 and G4 of the BS program, respectively. The combined program takes advantage of this common core of courses and applies completion of these common courses toward the MS program requirements and shortens the BS program requirements as follows:

- Item A1 of the MS program also 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, students in the combined program will take their three core courses in software, architecture and theory for graduate (not undergraduate) credit, hence will be required to perform and be graded at the (more advanced) level of graduate students in those courses. Upon successful completion of these core courses, they will be applied to the MS portion of the combined degree program. As a result of this arrangement, the BS component of the combined degree is shortened.

It should be noted that currently undergraduate students, with approval from their academic advisors, are allowed to register in these or other CS courses for graduate credit. Currently, if these students then enter the MS program, they may petition to count up to three units of graduate credit earned before entering the MS program to their MS requirements, if that credit was not applied to the undergraduate degree. Also, currently students in the BS program who take these core courses at the undergraduate level at Illinois and then enter the graduate program at Illinois are not required to retake these courses but may substitute other appropriate graduate courses to meet their MS requirements. Like all graduate students, students in the combined program have the option of taking these courses for 3/4 or 1 unit of credit. However, students in the combined program must have earned at least 120 hours of undergraduate credit in order to receive the combined BS/MS degree.

With approval from their (graduate) 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, provided they meet the required prerequisites, most likely during their senior year. This means that most students will need to complete only 5 - 5 3/4 units (including one unit of thesis credit) during their fifth year.

As a result of these requirements and options, students in the combined program will be required to earn at least 120 hours of undergraduate credit, *exclusive of the credit received for the three common courses* taken to fulfill the "distribution coursework" part of the MS component of the program. Compared with a student who completes a BS in CS in our department and then enters our MS program, the combined program would be shorter in total hours, but is stronger in the core areas. This is because the combined program requires the core courses to be taken at the graduate level, whereas in the "regular" BS + MS case (when the programs are completed separately) students complete the core courses at the undergraduate level.

3. Admission to the Program

- Students in the B.S. in computer science program who have an overall grade point average (GPA) of at least 3.5/4.0 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 recommend those with high potential for succeeding in a graduate degree for acceptance into the combined program. 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. The provisional admission will be a process handled entirely by and within the department.

Students admitted to the combined program must maintain an overall GPA of 3.5 through the end of their junior year and a GPA of 3.0 thereafter, in order to remain in the combined program.

4. Program Implementation

- The office of the Graduate Program of the Department of Computer Science will be implementing and overseeing this program.
- Students admitted to the combined program will receive both the BS and the MS degrees once all requirements for the combined degree program have been completed.
- Students in the combined program will be formally admitted to the graduate program in computer science once they have completed the requirements for the BS part of the combined program, as stated above, provided their GPA is 3.0 or higher. Admitted students will be issued letters of admission through the Office of Admissions and Records, at which time they will be transferred to the separate curriculum code that will be established for the combined degree program. Students who have been formally admitted to the combined

degree program will be considered graduate students beginning with the next semester and will be assessed graduate tuition.

- If, because of a low GPA or a less than required grade (B-) in any of the three MS distribution courses, students provisionally admitted to the combined program are not eligible to be admitted to the MS component of the combined program, the department will issue a denial of admission into the graduate program. Similarly, students fully admitted to the MS part of the combined program who choose to drop out of the combined program or are removed from the program because they fail to meet any of its requirements, will be transferred back to the regular BS program.

In each of the above cases, any graduate credit they have earned including the 3 distribution coursework requirements in software, architecture and theory may be converted through the petition process to undergraduate credit so that it may be applied to their BS degrees. Such students would receive the BS degree with a minimum of 128 hours earned and satisfaction of all degree requirements for the regular BS degree in Computer Science. Any graduate credit not needed to fulfill the BS degree requirements will remain on the transcript as graduate credit and may at some future point be considered for transfer to another degree program if the student wishes.

- Once fully admitted to the combined program, students are entitled to apply or be considered for graduate research or teaching assistantships, as well as other fellowships and scholarships available to graduate students.
- Like regular MS students, students in the combined BS/MS program must maintain a graduate GPA of 3.0 in order to remain in the combined program.
- Students in the combined program must satisfy the university's minimum residence requirements of three years' registration as an undergraduate and one semester as a graduate student.
- Undergraduates in the combined program may register for graduate courses and earn graduate credit, with approval from their graduate academic advisor, even if they are more than 10 hours from completing the baccalaureate degree. This is to allow students in the combined program the opportunity to take graduate courses relevant to their intended research, if those courses are not offered on a regular basis.
- Students admitted to the combined program are eligible to apply for the PhD program. If admitted, their combined degree will count as Stage 1 of the PhD program, as is customarily the case for students who have completed a master's degree.

- We anticipate an annual entry of 15-25 students into the combined program. We anticipate some additional monitoring and advising work associated with the program, but do not foresee the need for additional faculty/staff or other budgetary requirements for implementation of the program.
- We anticipate a starting date of Fall 2002 for the implementation of the program.

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

College of Engineering

Executive Committee
306 Engineering Hall, MC-266
1308 West Green Street
Urbana, IL 61801



August 1, 2001

Dean Nora Few
Graduate College
202 Coble Hall
MC-322

Dear Dean Few:

RECEIVED
AUG 16 2001
GRADUATE COLLEGE

The College of Engineering Executive Committee has reviewed and approved the following:

New Program: BS/MS Program in the Department of Computer Science

Enclosed find one original and seven copies for this request.

Sincerely,

A handwritten signature in black ink that appears to read "Mark Spong".

Mark Spong, Secretary
Executive Committee

Approval Recommended:

D. E. Daniel 8/1/01
D. E. Daniel, Dean Date
College of Engineering

Enclosures

cc: D. Reed
 D. Padua
 B. Trimble