Computer Engineering Program Change for Operating Systems Class
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The Problem

Computer Engineering is a joint program between the Electrical and Computer Engineering and the Computer Science departments. Similar to our increases in the number undergraduate majors, computer engineering has also been experiencing increasing enrollments over the last several years. That is because, while engineering overall has limited enrollment, once a student is accepted into engineering, she/he can choose any engineering major, including computer engineering.

Computer Engineering majors are required to take the same introductory Computer Science courses as our majors (CMSC131, CMSC132, CMSC216, CMSC250, CMSC330, CMSC351), and then must take CMSC412 (Operating Systems) and one additional 400-level Computer Science class. All of that is in addition to other required courses offered by the ECE department.

We have not been able to accommodate all Computer Engineering students in CMSC412 several times over the last few semesters, so because it is a graduation requirement we have worked out with ECE ad hoc solutions each semester (typically allowing students to take CMSC417 or CMSC430 instead). Continuing to do that is not an option, because it will endanger the Computer Engineering program’s accreditation status with ABET.

ECE has resurrected their Operating Systems course that has not been offered in recent years, ENEE447, and plans to offer it in spring 2016 and in subsequent years. ECE professor Bruce Jacob will teach the course in spring 2016, and is discussing how to teach it with CS faculty who teach CMSC412. A syllabus for ENEE447 is included with this proposal.

Additional Conditions

CMSC412 is a required class to graduate for the CE program. The computer science department currently lacks enough teaching capacity to accommodate all of the students in the program, much less CS students. This program change attempts to address this capacity. Adding ENEE447 as an option in addition to CMSC412 is a first step; we propose this change in conjunction with the following additional conditions to be conveyed to ECE.

To ensure long term fairness in the distribution of teaching load, the balance of between seats offered by CMSC and ENEE must be maintained: that it be at most 2:1, and at least 1:1, and that the initial offering of ENEE447 include at least 30 seats.

Our expectation is that after this program change, CS will offer at most twice as many annual seats in CMSC412 as ECE offers in ENEE447, and at least as many annual seats. This expectation would take effect AY 2016-2017. That is, Fall 2016 and Spring 2017 CMSC412 combined would each have as many seats as ENEE447 Spring 2016. Should the program
grow enough that 180 annual seats of operating systems are needed, ENEE447 would have to grow to between 60 and 90 students per year.

To address the problem of unprepared students failing CMSC412 and thus consuming twice as many seats (not to mention frustrating themselves and the instructors), we will propose adding a prerequisite to CMSC412 that students must take another systems or architecture course that involves programming (414, 417, 420, 430, 433) before 412. We note that ENEE447 already has an additional prerequisite beyond those for CMSC412, and we will welcome suggestions from ECE of their courses that might prepare students for the implementation tasks in 412 (and likely also ENEE447).

Proposed Change to the Computer Engineering Program

The proposed program change is to allow Computer Engineering majors to fulfill their Operating Systems requirement by taking either CMSC412 or ENEE447.

The change also requires that we change the CMSC412 course description to not allow a student to get credit for both CMSC412 and ENEE447. Students will also be limited to two total attempts to take both courses.