MEMORANDUM

TO:          Darryll Pines  
           Dean, A. James Clark School of Engineering

FROM:        Elizabeth Beise  
           Interim Associate Provost for Academic Planning and Programs

SUBJECT:     Proposal to modify the curriculum of the M.S. in Systems Engineering (PCC log no. 09078)

At its meeting on April 30, 2010, the Senate Committee on Programs, Curricula and Courses approved your proposal to modify the curriculum of the M.S. in Systems Engineering. A copy of the approved proposal is attached.

The changes are effective Fall 2010. The School should ensure that the changes are fully described in the Graduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

MDC/
Enclosure

cc:         Alex Chen, Chair, Senate PCC Committee  
           Sarah Bauder, Office of Student Financial Aid  
           Reka Montfort, University Senate  
           Erin Howard, Data Administration  
           Donna Williams, Institutional Research & Planning  
           Anne Turkos, Archives  
           Linda Yokoi, Office of the Registrar  
           Thomas Castonguay, Graduate School  
           Gary Pertmer, A. James Clark School of Engineering  
           Reza Ghodssi, Institute for Systems Research
THE UNIVERSITY OF MARYLAND, COLLEGE PARK
PROGRAM/CURRICULUM/UNIT PROPOSAL

• Please email the rest of the proposal as an MSWord attachment to pcc-submissions@umd.edu.
• Please submit the signed form to the Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.

College/School: A. James Clark School of Engineering
College/School Unit Code-First 8 digits: 01203200
Unit Codes can be found at: https://hypprod.umd.edu/Html_Reports/units.htm

Department/Program: Systems Engineering (ENSE)
Department/Program Unit code-Last 7 digits: 1321701

Type of Action (choose one):
- Curriculum change (including informal specializations)
- Renaming of program or formal Area of Concentration
- Addition/deletion of formal Area of Concentration
- Suspend/delete program
- New academic degree/award program
- New Professional Studies award iteration
- New Minor
- Other

Italics indicate that the proposed program action must be presented to the full University Senate for consideration.

Summary of Proposed Action: Reduction in the requirement for the total number of units for the ENSE Master's Degree from 36 to 30.

APPROVAL SIGNATURES - Please print name, sign, and date. Use additional lines for multi-unit programs.

1. Department Committee Chair: David Lovell, Chair, ISR Educ. Program Comm.
2. Department Chair: Reza Ghodssi, Director, Inst/Systems Research
3. College/School PCC Chair
4. Dean
5. Dean of the Graduate School (if required)
6. Chair, Senate PCC
7. University Senate Chair (if required)
8. Vice President for Academic Affairs & Provost

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The Educational Program Committee within the Institute for Systems Research conducted a two-year review of the required curriculum for the ENSE Master's Degree. This review included a report from the Systems Engineering Graduate Program Advisory Board, which consists of internal and external experts, interviews with current and former students, and consultations with full-time and adjunct faculty teaching courses in the ENSE program. The two directives from this review that required PCC attention are:

1. Deletion of the required course ENSE 625, Systems Financial and Contract Management, and
2. Reduction of the number of required credits to complete the Master's Degree in ENSE from 36 to 30.

The committee decided that a lot of the material in ENSE 625 was redundantly presented in another required course, ENSE 626, System Life Cycle Cost Analysis and Risk Management. It was felt that the content of these two courses could be merged into one course. This course deletion was submitted to VPAC and PCC in April of 2008.

There are several reasons why we would like to reduce the credit requirement. First, all other MS programs in the Clark School of Engineering have a 30 credit requirement for the MS. Typically, this can be met by a thesis option, in which students take 24 credits of coursework and satisfy the remaining 6 credits with thesis credit, or a non-thesis option, in which students take all 30 credits from regular coursework. Many departments require non-thesis M.S. students to write a scholarly paper, and some will grant 3 credits towards this effort, which is supposed to be less onerous than a thesis, does not have the same expectation with regard to originality, and is reviewed by only a single faculty member rather than a committee. In their current incarnation, the ENSE requirements are equal to these requirements, with no credit given towards the scholarly paper for non-thesis students, plus an additional 6 credits of coursework. Reducing this number would put the ENSE program on par with the rest of the college. We have anecdotal evidence that suggests that we are losing prospective students to other areas of engineering because our higher credit requirement is seen as onerous. We have further anecdotal evidence from full time faculty that ENSE students are less desirable as research assistants because the extra coursework requirements make them busier and less able to afford the time necessary to conduct research.

Historically, one reason for keeping the higher credit requirement was the large number of required courses (7) in the ENSE MS program. A student pursuing the thesis option would spend 7 courses (21 credits) on required courses and 6 credits on a thesis, leaving 9 credits for 3 elective courses, if a total of 36 credits were required. A student pursuing the non-thesis option would have 21 credits of required coursework and 15 credits (5 classes) of elective work. With this requirement structure, a reduction to 30 total credits would have allowed a thesis student only 1 elective course and a non-thesis student 3 elective courses. This was felt to be too little flexibility.

With the deletion of the required course ENSE 625, however, the total number of required courses for the degree dropped to 6. For now, that means that thesis students can take 12 elective credits and non-thesis students can take 18 elective credits. With the subsequent credit requirement reduction, this would translate to an allowance of 2 elective courses (6 credits) for thesis students and 4 elective courses (12 credits) for non-thesis students, which the external board, Educational Program Committee, and the ISR Executive Committee have all decided is sufficient. This proposal was presented to the ISR Executive Committee and received unanimous approval.

The following table summarizes the current and proposed programs and the differences therein.
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<tr>
<th>Thesis option</th>
<th>Current program</th>
<th>Proposed program</th>
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<tbody>
<tr>
<td>MS with thesis</td>
<td>• 30 credits coursework</td>
<td>• 24 credits coursework</td>
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<td>o 18 credits required</td>
<td>o 18 credits required</td>
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<tr>
<td></td>
<td>o 12 credits elective</td>
<td>o 6 credits elective</td>
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<tr>
<td></td>
<td>• 6 credits thesis credit</td>
<td>• 6 credits thesis credit</td>
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<tr>
<td></td>
<td>• Total = 36 credits</td>
<td>• Total = 30 credits</td>
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<tr>
<td>MS non-thesis (scholarly paper)</td>
<td>• 36 credits coursework</td>
<td>• 30 credits coursework</td>
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<td>o 18 credits required</td>
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