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## Proposal to the Senate Educational Policy Committee

**PROPOSAL TITLE:** Establish a Graduate Concentration in Computational Engineering within the Major in Engineering in the Master of Engineering Degree in the College of Engineering.

**SPONSOR:** Professor Placid Ferreira, Head, Mechanical Science and Engineering Department, 217-333-0639, pferreir@illinois.edu

**COLLEGE CONTACT:** William Buttlar, Associate Dean, Office of Graduate, Professional and Online Programs, College of Engineering, 265-4561, buttlar@illinois.edu

### BRIEF DESCRIPTION:

This proposal seeks to establish a concentration in Computational Engineering within the Major in Engineering in the Master of Engineering (M.Eng.) degree in the College of Engineering (CoE). This is not the same as the M.Eng. in ME degree program. The Computational Engineering Concentration is professionally oriented and aimed at providing graduate students with a solid base in problem solving using computation as a major tool for modeling complicated problems in science and engineering. This concentration will be housed in the Department of Mechanical Science and Engineering (MechSE) and admission decisions, advising of students, and confirmation of degree completion will be administered by the Computational Science and Engineering (CSE) Unit. The Computational Science and Engineering Unit is an interdisciplinary research and education program housed in the College of Engineering that fosters and coordinates interdisciplinary, computationally oriented research and education across all fields of science and engineering. CSE will work with the MechSE Academic Office to process all the necessary student paperwork. The CSE M.Eng. concentration will be comprised of 32 credits, with:

- 16 credit hours of core course work in the areas of Applied Math, Computational Methods, and Parallel/Ubiquitous Computing (see Appendix A);
- 12 credit hours in a CSE specialization (see Appendix A);
- 4 credit hours of professional development, and;
- At least 12 credit hours taken at the 500-level.

### JUSTIFICATION:

CSE is housed in the College of Engineering (CoE). Both graduate and undergraduate certification programs are offered for students enrolled in departments affiliated with us. Courses offered in CSE are those that are cross-listed with our affiliated academic departments relevant to computational science. Below is a list of the departments affiliated with CSE.

|   |   |
|---|---|
| Aerospace Engineering                   | Computer Science                              |
| Agricultural and Biological Engineering | Electrical and Computer Engineering           |
| Astronomy                               | Industrial and Enterprise Systems Engineering |
| Atmospheric Sciences                    | Materials Science and Engineering             |
| Bioengineering                          | Mathematics                                   |
| Biophysics and Computational Biology    | Mechanical Science and Engineering            |
| Chemical and Biomolecular Engineering   | Nuclear, Plasma and Radiological Engineering  |
| Chemistry                               | Physics                                       |
| Civil and Environmental Engineering     | Statistics                                    |

Computation is widely considered as the "third pillar" of science, alongside theory and experiment. The heart of Computational Science and Engineering is to develop innovative ways of solving engineering and scientific problems using computation as a tool. This new form of science compresses the development pipeline by eliminating laborious, costly, and lengthy trial-and-error experiments. This proposal addresses the pedagogical challenge of harnessing high-performance computers and exploiting them to create virtual computer experiments that solve real scientific problems. In order to train students to develop virtual experiments that mimic physical phenomena, they must first know how to abstract the physical phenomenon to a conceptual model and then translate this into a validated computational model. The proposed M.Eng. concentration aims to navigate the existing steep learning curve by introducing professionally oriented students to a systematic curriculum that builds upon existing course work offered at the university. The curriculum presented here has been designed to impart students with solid CSE foundational knowledge and skills, and includes technical specialization courses that enhance student's domain expertise.

Currently few of our peer institutions in the United States have adopted full graduate programs in Computational Science and Engineering beyond the certificate or minor model. Harvard has recently established a one year intensive Master in Science (MS) program. Georgia Tech is also home to an interdisciplinary CSE MS degree that offers the option of taking portions of the program as part of Georgia Tech's Professional Education program. Other notable MS degrees in CSE in the United States include programs offered by NYU's Courant Institute of Mathematical Sciences and the Institute of Computational Engineering and Sciences (ICES) at UT Austin. Some of the international noteworthy programs include EPFL (Switzerland), TUM (Germany), University of Vienna (Austria), and KU Leuven (Belgium).

According to the US Department of Labor, Bureau of Labor Statistics, computational science and engineering is substantially used across various disciplines of engineering, and the need for computing continues to emerge in more diverse scientific areas such as biology, chemistry, environmental science, geology, and meteorology. In addition, a computational engineering background is valuable for financial engineering, software engineering, data science, and other areas requiring the use of computational models to predict physical phenomena. As such, obtaining an advanced degree in computational engineering provides a functional array of career options, and job prospects that will experience upward growth trends for the foreseeable future. The multidisciplinary training provided by this program equips graduates with diverse and highly marketable skill sets in demand by employers across various industry sectors. Students in the

Computational Engineering concentration will have the full resources of the CoE Engineering Career Services office to assist with job placement.

Establishing the proposed M.Eng. program at the University of Illinois at Urbana-Champaign affirms Illinois as one of the few forefront institutions offering an advanced professional program in CSE. There is also a local need for this program within our Champaign-Urbana community. We conducted a market study to quantify the number of professionals that could potentially be interested in an M.Eng. in Computational Engineering at the Research Park. Located on the University of Illinois at Urbana-Champaign campus, the Research Park hosts 90 companies which employ more than 1,400 people. Generally they have a high-tech focus, but the companies span many industry sectors, prominently IT, biotechnology, agriculture, and manufacturing. Of the 835 full-time professional employees in Research Park, about 300 of them work in a CSE-aligned industry sector. Based on our survey, 44 of those employees expressed interest in the M.Eng. in Computational Engineering allowing UIUC to become an academic leader in the continuing training of already established professionals looking to broaden their vocational impact.

#### **BUDGETARY AND STAFF IMPLICATIONS:**

##### 1) Resources

- a. How does the unit intend to financially support this proposal?

*This concentration is requesting self-supporting program status. Students enrolled in this concentration will pay tuition. The College of Engineering will use graduate tuition dollars returned to the college from the Office of the Provost Budget and Resource Planning to fund additional instructional resources needed, \*if any) to support the curriculum in M.Eng. programs. Graduate tuition funds returned to the college from campus are considered state, recurring funds that may be used to fund faculty hires or support instruction in other ways. The college has developed a tuition distribution model for departments offering majors/concentrations within the M.Eng. degree. Graduate tuition funds returned to the college will be distributed to the designated home unit (and college departments providing instruction) to supplement instruction resources needed (if any) to support students in the M.Eng. degree programs. This program will be a self-funded program. Please see Appendix C for the Tuition MOU Agreement.*

- b. How will the unit create capacity or surplus to appropriately resource this program? If applicable, what functions or programs will the unit no longer support to create capacity?

*The proposed curriculum for this program groups together existing courses currently available for student enrollment. No new courses are being proposed to support this curriculum at the time of program launch; however, with additional hires in big data made possible through the Grainger endowment, additional courses and sections can be added as needed to ensure quality and program competitiveness. Existing capacity and carefully controlled enrollments will ensure sufficient capacity without sacrificing the quality of experience for all students involved.*

- c. Will the unit need to seek campus or other external resources? If so, please provide a summary of the sources and an indication of the approved support.

No.

- d. Please provide a letter of acknowledgment from the college that outlines the financial arrangements for the proposed program.

*This program will be a self-funded program. Please see Appendix C for the Tuition MOU Agreement.*

## 2) Resource Implications

- a. Please address the impact on faculty resources including the changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc.

*The total enrollment in this M.Eng. concentration is expected to be approximately 25-30 in steady state. The proposed curriculum incorporates a wide selection of existing courses offered by CSE affiliated departments, involving dozens of faculty and courses. Therefore, the proposed program will not significantly increase the enrollment of any one course or the student-faculty ratio. Additionally, since the departments whose courses are used in this program are signatories to the COE tuition distribution MOU for the M.Eng programs, any impact resulting from this concentration can be accommodated using supplementary resources provided under the tuition distribution model.*

- b. Please address the impact on course enrollment in other units and provide an explanation of discussions with representatives of those units.

*We have worked very closely with the department whose courses appear in this proposal in the year preceding our submission to ensure that (1) we have created enough pathways for students in order to avoid negative impact on course enrollments and (2) that our proposed concentration remains truly interdisciplinary and does not lead to a degree similar to what is offered by any existing CoE department. Additionally, the CoE required that we collect formal letters of support from the Heads of these departments affirming that they do support our proposed Computational Engineering M.Eng. concentration and agree to accommodate students who elect to take their respective courses to fulfill the Computational Engineering M.Eng. concentration (letters are submitted with this proposal).*

*Since we are offering students a wide selection of courses to choose from, we anticipate that the enrollments will be spread across the various participating departments. It is not anticipated that additional course sections will be needed to accommodate this concentration in the near future, i.e., with enrollments at or near the target of 25-30 students. Any resources needed to address impact to course enrollment can be accommodated with the supplementary resources provided under the tuition distribution MOU model.*

- c. Please address the impact on the University Library. *None anticipated. Letter provided.*
- d. Please address the impact on technology and space (e.g. computer use, laboratory use, equipment, etc.).

*No impact on research labs. Minimal impact on engineering workstations labs. Any resources needed to address impact to the college's lab resources can be accommodated with the college's retaining percentage of graduate tuition.*

*Additionally, CSE has access to high performance [Parallel Computing resources](#) which are hosted by the Illinois Campus Cluster. We plan on providing students access to our supercomputing resources.*

For new degree programs only:

- 3) Briefly describe how this program will support the University's mission, focus, and/or current priorities. Include specific objectives and measurable outcomes that demonstrate the program's consistency with and centrality to that mission.

*The M.Eng. degree programs are consistent with the University's mission to serve the state, the nation, and the world, preparing students for impactful lives through the transfer and application of knowledge. The proposed Computational Engineering concentration will provide graduate students with a solid base in problem-solving using computation as a major tool for modeling complicated problems in science and engineering. Computational (in silico) experiments facilitate the study of scientific problems that would be too costly or even dangerous to study by direct experimentation, potentially eliminating laborious, costly, and lengthy trial and error experiments.*

- 4) Please provide an analysis of the market demand for this degree program. What market indicators are driving this proposal? What type of employment outlook should these graduates expect? What resources will be provided to assist students with job placement?

*According to the US Department of Labor, Bureau of Labor Statistics, computational science and engineering is substantially used across various disciplines of engineering, and the need for computing continues to emerge in more diverse scientific areas such as biology, chemistry, environmental science, geology, and meteorology. In addition, computational engineering background is valuable to financial analytics, acoustics, and graphics. Obtaining an advanced degree in computational engineering provides an array of career options, and job prospects will be on an upward growth trend for the foreseeable future. The multidisciplinary training provided by this program equips graduates with a diverse and highly marketable skill set in demand by employers across various industry sectors. Students in the Computational Engineering concentration will have the resources of the CoE Engineering Career Services office to assist with job placement.*


- 5) If this is a proposed graduate program, please discuss the programs intended use of waivers. If the program is dependent on waivers, how will the unit compensate for lost tuition revenue?

*The proposed program will not use waivers. Self-supporting status will be requested for this concentration, i.e., students under this program code will not be eligible for tuition waivers. Like most other M.Eng. programs, this will be a fast-paced, 12- or 16-month professionally-oriented master's program. Students will be self-funded and engaged in coursework and professional training, with minimal emphasis on research and associated skills development.*

| <b>MENG in Engineering Program Requirements</b>   | <b>Hours</b> | <b>MENG in Engineering w/Concentration in Computational Engineering</b>   | <b>Hours</b> |
|---|--------------|---|--------------|
| <b>Total Credits for Degree</b>   | <b>32</b>    | <b>Total Credits for Degree</b>   | <b>32</b>    |
| <b>Course work</b>  | <b>32</b>    | <b>Course work</b>  | <b>32</b>    |
| At least 12 hours must be in a core area  | 12           | <b>Core Area:</b> Minimum of one course from each of the following categories: <ul style="list-style-type: none"> <li>• <b>Applied Math:</b> ECE 490/CSE 441, PHYS 508, PHYS 509, TAM 541, TAM 542</li> <li>• <b>Computational Methods:</b> TAM 470/CSE 450, CS 450/CSE 401, ATMS 502/CSE 566, ME 471/CSE 451/AE 420</li> <li>• <b>Parallel/Ubiquitous Computing:</b> CS 420/CSE 402 or ECE 408/CS 483/CSE 420</li> </ul>   | 16           |
| At least 8 hours must be in a secondary field   | 8            | <b>Secondary Area:</b> At least three courses in one of the following Areas of Specialization.. <ul style="list-style-type: none"> <li>• <b>Advanced Computational Methods:</b> ATMS 502/CSE 566, PHYS 598 CPA, ASTRO 510, CEE 570/CSE 551, CEE 576/CSE 552, CEE 598 SDO, TAM 574/CSE 517, IE 521, ECE 580, ECE 540/CSE 530</li> <li>• <b>Solid Mechanics:</b> ME 471/CSE 451/AE 420, ME 570, CEE 570/CSE 551, TAM 574/CSE 517, CEE 576/CSE 552, ME 554/CSE 561</li> <li>• <b>Fluid Mechanics:</b> ME 412/CSE 412, AE 410/CSE 461, TAM 570/CSE 560, ME 554/CSE 561, ATMS 502/CSE 566</li> <li>• <b>Computational Electronics, Materials and Systems:</b> ECE 417, ECE 418, ECE 487, ECE 553, ECE 555, ECE 558, ECE 540/CSE 530, ECE 552/CSE 532, ECE 539, ECE 580, IE 510, IE 513, PHYS 466, MSE 498AF</li> </ul> | 12           |
| Up to 8 hours of electives  | 8            | None  | 0            |
| A minimum of 4 hours of professional development is required. This can be fulfilled through a combination of a capstone project, an internship with a company secured by the student, and/or business-oriented courses. | 4            | Professional Development: ENG 460, 461, 466, 560, 565, 566, 567, 598  | 4            |
| At least 12 hours must be at the 500-level, 8 of which must be in the core area.  |              | At least 12 hours must be at the 500-level, 8 of which must be in the core area.  |              |


**CLEARANCES:**

Signatures:

  
\_\_\_\_\_  
Unit Representative:

\_\_\_\_\_  
Date:

4-30-15

  
\_\_\_\_\_  
College Representative:

\_\_\_\_\_  
Date:

5/19/2015

  
\_\_\_\_\_  
Graduate College Representative:

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Council on Teacher Education Representative:

\_\_\_\_\_  
Date:

## Appendix A: Course Requirements and Program Administration

| Requirements  |           |
|---|-----------|
| Credit Hours  | Hours     |
| Core Courses:<br><b>Minimum of one course from each of the following categories:</b> <ul style="list-style-type: none"> <li>• Applied math course(s), from approved list</li> <li>• Computational Methods course(s), from approved list</li> <li>• Parallel/Ubiquitous Computing course(s), from approved list</li> </ul> | 16        |
| <ul style="list-style-type: none"> <li>• Area of Specialization courses, from approved list</li> </ul>  | 12        |
| <ul style="list-style-type: none"> <li>• Professional development courses, from approved list</li> </ul>  | 4         |
| <b>Total Coursework Hours</b>   | <b>32</b> |

### Core Courses\* (16 hours)

#### **Applied Math** (minimum 4 hours)

- ECE 490/CSE 441 Introduction to Optimization
- PHYSICS 508 Mathematical Physics I
- PHYSICS 509 Mathematical Physics II
- TAM 541 Mathematical Methods I
- TAM 542 Mathematical Methods II

#### **Computational Methods** (minimum 4 hours)

- TAM 470/CSE 450 Computational Mechanics
- CS 450/CSE 401 Numerical Analysis
- ATMS 502/CSE 566 Numerical Fluid Dynamics
- ME 471/CSE 451/AE 420 Finite Element Analysis

#### **Parallel/Ubiquitous Computing** (minimum 4 hours)

- CS 420/CSE 402 Parallel Programming: Science & Engineering
- ECE 408/CS 483/CSE 408 Applied Parallel Programming

\*Students may take an equivalent **advisor approved** course

### Areas of CSE Specialization\* (12 hours)

\*Students may take an equivalent **advisor approved** course

#### **Advanced Computational Methods**

- ATMS 502/CSE 566 Numerical Fluid Dynamics



- Physics 598 CPA Topics in Computational Physics and Astronomy
- ASTRO 510 Computational Astrophysics
- CEE 570/CSE 551 Finite Element Methods
- CEE 576/CSE 552 Nonlinear Finite Elements
- CEE 598 SDO Structural Design Optimization
- TAM 574/CSE 517 Adv Finite Element Methods
- IE 521 Convex Optimization
- ECE 580 Optimization by Vector Space Methods
- ECE 540/CSE 530 Computational Electromagnetics

### **Solid Mechanics**

- ME 471/CSE 451/AE 420 Finite Element Analysis
- ME 570 Nonlinear Solid Mech Design
- CEE 570/CSE 551 Finite Element Methods
- TAM 574/CSE 517 Adv Finite Element Methods
- CEE 576/CSE 552 Nonlinear Finite Elements
- ME 554/CSE 561 Computational Process Modeling

### **Fluid Mechanics**

- ME 412/CSE 412 Numerical Thermo-Fluid Mechanics
- AE 410/CSE 461 Computational Aerodynamics
- TAM 570/CSE 560 Computational Fluid Mechanics
- ME 554/CSE 561 Computational Process Modeling
- ATMS 502/CSE 566 Numerical Fluid Dynamics

### **Computational Electronics, Materials and Systems**

- ECE 417 Multimedia Signal Processing
- ECE 418 Image & Video Processing
- ECE 487 Introduction to Quantum Electronics
- ECE 553 Optimum Control Systems
- ECE 555 Control of Stochastic Systems
- ECE 558 Digital Imaging
- ECE 540/CSE 530 Computational Electromagnetics
- ECE 552/CSE 532 Numerical Circuit Analysis
- ECE 539 Advanced Theory of Semiconductors & Devices
- ECE 580 Optimization by Vector Space Methods
- IE 510 Applied Nonlinear Programming
- IE 513 Optimal System Design
- PHYS 466 Atomistic Scale Simulations
- MSE 498AF Computational Material Science and Engineering

**[OPTIONAL] Foundation non-CSE courses (max 4 hours)**

Students may take an advisor-approved non-CSE foundational course in areas such as Advanced Computational Methods, Fluid Mechanics, Solid Mechanics, or Computational Electronics, Materials, and Systems (e.g. TAM 531, TAM 532, CEE 451, etc.)

**Professional Development (4 hours)**

Students must complete 4 hours of professional development from the list below or other advisor approved course meeting the requirements for Professional Development.

- ENG 460 Entrepreneurship for Engineers (1 credit hour)
- ENG 461 Technology Entrepreneurship (3 credit hours)
- ENG 466 High-Tech Venture Marketing (2 credit hours)
- ENG 560 Managing Advanced Technol I (1 credit hour)
- ENG 565 Technol Innovation & Strategy (2 credit hours)
- ENG 566 Finance for Engineering Mgmt (2 credit hours)
- ENG 567 Venture Funded Startups (1 credit hour)
- ENG 598: Special Topic where topics include Applied Project Management and Creativity, Innovation & Vision, Advancing Creativity, and Teach Resp Cond of Research I, Independent Research/project

**PROGRAM ADMINISTRATION**

The Department of Mechanical Science and Engineering (MechSE) will serve as the home unit for all the students in this concentration. The MechSE department will process all required paperwork for applicants and current students. The Dean of the College of Engineering appoints the Director of the CSE Unit. The CSE unit appoints a committee, which will be approved by the College of Engineering's Executive Committee. This committee will complete the admissions review/decisions, advising of students, and determination that all degree requirements have been met, and the curriculum changes/enhancements of this degree program.

## **Appendix B:**

### **Statement for Program of Study**

#### **College of Engineering**

[engineering.illinois.edu](http://engineering.illinois.edu)

William Buttlar

Associate Dean for Graduate, Professional, and Online Programs

402 Engineering Hall

1308 West Green Street

Urbana, Illinois 61801

(217) 333-5966

E-mail: [buttlar@illinois.edu](mailto:buttlar@illinois.edu)

**Major:** Engineering

**Degrees Offered:** Master of Engineering

**Graduate Concentration:** Computational Engineering

#### **Graduate Degree Programs**

The College of Engineering offers a professional master's degree program for students whose primary intent is a career in industry or government. This degree differs from the Master of Science degree in that it is a terminal degree and not a pathway to a doctoral program. The major in Engineering for the M.Eng. degree requires the selection of an interdisciplinary concentration.

#### **Admission**

Students with bachelor's or master's degrees in engineering or related fields will be considered for admission if they have a grade point average of at least 3.00 (A = 4.00) for the last two years of undergraduate study. Admission is possible for the spring term, but most admissions are for the fall term. Full details of admission requirements are on the web page of the department offering the concentration.

All applicants whose native language is not English must submit a minimum [TOEFL](#) score of 103 (iBT), 257 (CBT), or 613 (PBT); or minimum [International English Language Testing System \(IELTS\)](#) academic exam scores of 7.0 overall and 6.0 in all subsections. Applicants may be exempt from the TOEFL if [certain criteria](#) are met. [Full admission status](#) is granted for those meeting the minimum requirements and having taken the TOEFL or IELTS since the scores required for admission to M.Eng. are above the minimum scores demonstrating an acceptable level of English language proficiency.

#### **Degree Requirements**

\* For additional details and requirements, please refer to the web page of the concentration's home unit and the Graduate College Handbook.

**Master of Engineering, Major in Engineering with a Concentration in Computational Engineering**

| <b>Requirements</b>   |              |
|---|--------------|
| <b>Credit Hours</b>   | <b>Hours</b> |
| <i>Total Credit for the Degree</i>  | <b>32</b>    |
| Course Work   | 32           |
| Core Courses:<br>Complete <b>minimum one</b> course <b>from each of the following</b> : <ul style="list-style-type: none"> <li>• Applied math course chosen from <a href="#">approved list</a></li> <li>• Computational Methods course chosen from <a href="#">approved list</a></li> <li>• Parallel/Ubiquitous Computing course chosen from <a href="#">approved list</a></li> </ul> | 16           |
| <ul style="list-style-type: none"> <li>• Area of Specialization courses from <a href="#">approved list</a></li> </ul>   | 12           |
| <ul style="list-style-type: none"> <li>• Professional development courses from <a href="#">approved list</a></li> </ul>   | 4            |
| <b>Other Requirements and Conditions (may overlap):*</b>  |              |
| A minimum of 20 credit hours must be taking from the University of Illinois Urbana Champaign campus.  |              |
| A minimum of 12 500-level credit hours in the concentration, with at least 8 credit hours in the core concentration.  |              |
| No courses used to fulfill any degree requirement may be taken using the “Credit/No Credit” option.   |              |
| The minimum program GPA is 3.0.   |              |

## **Appendix C:**

### **MOU Agreement**

#### **COLLEGE OF ENGINEERING (CoE)**

#### **AND THE**

#### **DEPARTMENT OF MECHANICAL SCIENCE AND ENGINEERING (MechSE)**

For the distribution of tuition funds for tuition generating enrollments in the Professional Master's degree program in the Department of Mechanical Science and Engineering.

This MOU applies to tuition paying M.Eng. in Engineering with a concentration in Computational Engineering students in the Mechanical Science and Engineering Department and establishes a formula for the transfer of tuition funds between the CoE and Mechanical Science and Engineering. This is a new agreement established in February 2015, which also follows the CoE Guidance Document for Professional Master's Program Tuition Sharing ratified in July 2014. This agreement is not applicable to online programs or enrollments.

- For tuition generated by the Department of Mechanical Science and Engineering self-supporting MS students, net tuition funds (those returned to the CoE from campus) will be split as follows: 20% CoE, 80% Department of Mechanical Science and Engineering.
- \$200 per IU will go to the department teaching the course.

Using the Campus Budget Office's report on net tuition received, tuition as non-recurring funds will be distributed to the Department of Mechanical Science and Engineering at the end of each fiscal year. MechSE and CSE will establish an MOU that outlines the revenue agreement between the two units. This agreement is effective August 2016 (or the term the program is approved) and valid through Spring 2019.

#### **Signatures:**

\_\_\_\_\_  
by Andreas Cangelaris  
Dean, College of Engineering

\_\_\_\_\_  
Date

\_\_\_\_\_  
by Placid Ferreira  
Head, Department of Mechanical Science and Engineering

\_\_\_\_\_  
Date



**REQUEST & JUSTIFICATION FORM FOR PROGRAM CLASSIFICATION  
TRADITIONAL, SELF-SUPPORTING or REIMBURSABLE**

**CURRENT PROGRAMS:**

Current graduate programs can request a change in classification to Traditional or Reimbursable, but not to Self-supporting.

**NEW PROGRAMS:**

New programs seeking Traditional classification do not need to complete this form.

New programs seeking Self-supporting classification should be aware of the following:

- a) Students enrolled in Self-supporting programs are ineligible to hold waiver-generating appointments. NOTE: There is no mechanism within the Human Resources Front End system that restricts the appointment of a Self-supporting program student to an assistantship. Therefore, if a unit (faculty or staff) appoints a student, in error, significant problems result for everyone involved.
- b) Self-supporting status results in reduced flexibility for the program. Even if a student in the program is most qualified for a particular assistantship appointment and financing is available through the program, the program status makes the student ineligible.
- c) Because Traditional, Reimbursable and Self-supporting programs each yield 90% of net tuition, and the Reimbursable classification avoids the limitations above, a program might find the Reimbursable classification more advantageous than Self-supporting.

Please contact the Fellowship Office at the Graduate College if you have questions or seek clarifications, (217) 333-0036 or gradfellowships@illinois.edu.

**COLLEGE OR SCHOOL:** College of Engineering

**IS THIS A NEW OR EXISTING PROGRAM:**

New Program

Existing Program

Program Code: \_\_\_\_\_ Current Classification: \_\_\_\_\_

**REQUESTED CLASSIFICATION:**  TRADITIONAL  REIMBURSABLE  SELF-SUPPORTING

**JUSTIFICATION: On a separate sheet, please address the following.**

1. Describe the reasons for this request and explain: (a) the pros and cons of the classification requested, and (b) how the requested classification will benefit and not adversely affect the academic quality of the program.
2. Describe the expected impact of the requested classification to new students. How will these measures affect the affordability of the program? What type of financial aid, if any, will be offered? Note: Continuing students will not be affected as they are subject to the rules in effect at the time of their admission.
3. What provisions will be made to communicate the implications of the classification to prospective and newly admitted students?
4. Name the college and program contact persons in charge of implementing and communicating the classification and its consequences to students.

Unit Head Signature and Date 

College Dean Signature and Date \_\_\_\_\_

**1. Describe the reasons for this request and explain: (a) the pros and cons of the classification requested, and (b) how the requested classification will benefit and not adversely affect the academic quality of the program.**

This is a request to establish self-supporting status for a new concentration within the M.Eng. in Engineering, Computational Engineering. The total enrollment in this professional degree program is projected to be approximately 25-30, representing a small fraction of the enrollments in MechSE graduate programs. As such, there will not be any significant impact on class sizes for current or future graduate students in the existing M.S. and Ph.D. programs. Designating this new program as self-supporting will not effect admissions standing for the M.Eng. or the existing M.S. and Ph.D. programs. The program will generate new revenue for MechSE and the College of Engineering units as a whole, enabling us to increase the level of TA and grader support for all graduate courses. We expect that establishment of the self-supporting M.Eng. in Engineering with a concentration in Computational Engineering will not decrease the quality of the educational experience in all of the graduate degree programs in MechSE and Engineering.

**2. Describe the expected impact of the requested classification to new students. How will these measures affect the affordability of the program? What type of financial aid, if any, will be offered? Note: Continuing students will not be affected as they are subject to the rules in effect at the time of their admission.**

The concentration in Computational Engineering is a new concentration under the M.Eng. in Engineering. No change that would affect any current or future students in the existing M.S. or Ph.D. degree programs is proposed. All students entering the new concentration will need to pay tuition. We do not intend to offer financial aid to any students who are enrolled in the M.Eng. program.

**3. What provisions will be made to communicate the implications of the classification to prospective and newly admitted students?**

The self-supporting nature of this program will be clearly explained on the program's website and in any and all communications to prospective students.

**4. Name the college and program contact persons in charge of implementing and communicating the classification and its consequences to students**

This is an new M.Eng. in Engineering concentration. No changes are being requested. Professor Narayana Aluru, Director, Computational Science and Engineering and Kritzer Professor in Mechanical Engineering, , Mohamed Mohamed, Coordinator of CSE Education Programs, and the MechSE Academic Office (Katrina Hagler and Kathy Smith) will be responsible for communicating with prospective students. The College of Engineering contacts for this program are Bill Buttlar, Associate Dean of Engineering Graduate, Professional, and Online Programs, and Rhonda McElroy, Director of Engineering Graduate and Professional Programs.

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

University Library

Office of Dean of Libraries  
and University Librarian  
230 Main Library, MC-522  
1408 West Gregory Drive  
Urbana, IL 61801



February 5, 2015

Placid Ferreira  
Head, Mechanical Science and Engineering Department  
College of Engineering  
2132 MEL  
M/C 244

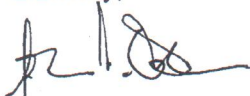
Dear Professor Ferreira:

Thank you for affording the University Library the opportunity to review the College of Engineering's proposal to the Senate Committee on Educational Policy to establish a concentration in Computational Engineering within the Major in Engineering in the Master of Engineering (M.Eng.) degree.

Based upon the proposal submitted to the Library and the review conducted by Bill Mischo, we do not believe that there will be any substantial, immediate impact on the Library's materials or operations.

We appreciate your providing us with the proposals as such contact does help ensure that our services are in line with the programs developing in the College.

Sincerely,



John Wilkin  
Juanita J. and Robert E. Simpson  
Dean of Libraries and University Librarian

c: Bill Mischo  
William Buttlar  
Thomas Teper



**Subject:** Fwd: ENG Tech Courses: MEng Approval  
**Date:** Saturday, January 17, 2015 at 2:47:30 AM Central Standard Time  
**From:** Mohamed Mohamed (sent by mohamed.mohamed33@gmail.com  
<mohamed.mohamed33@gmail.com>)  
**To:** McElroy, Rhonda Kay

Hi Rhonda,

Here is Andy Singer's approval for the Engineering TEC courses.

Kind regards,

M. Mohamed

"Our greatest fear should not be of failure but of succeeding at things that don't really matter"  
— Francis Chan

"Simplicity is the ultimate sophistication"  
— Leonardo da Vinci

----- Forwarded message -----

**From:** Singer, Andy <[acsinger@illinois.edu](mailto:acsinger@illinois.edu)>  
**Date:** Sat, Jan 17, 2015 at 2:26 AM  
**Subject:** Re: ENG Tech Courses: MEng Approval  
**To:** "Mohamed, Mohamed Y" <[mohamed@illinois.edu](mailto:mohamed@illinois.edu)>, "Buttler, William G" <[buttler@illinois.edu](mailto:buttler@illinois.edu)>  
**Cc:** "Aluru, Narayana R" <[aluru@illinois.edu](mailto:aluru@illinois.edu)>, "Taylor, Jed L" <[jedt@illinois.edu](mailto:jedt@illinois.edu)>

Dear Mohamed,  
This looks like a fine proposal and I am please that the TEC can be a part of it.

Best regards,  
Andy

Sent from my iPhone

On Jan 16, 2015, at 9:27 PM, Mohamed Mohamed <[mohamed@illinois.edu](mailto:mohamed@illinois.edu)> wrote:

Dear Andy,

The Computational Science and Engineering has put together an M.Eng concentration (see attachment) and as part of the college submission we were asked to contact you to get an approval for including ENG Tech courses in the 4 hour Professional Development component of the program. Can you please provide us with a short email stating that you are OK with the listed ENG Tech courses appearing in our proposed M.Eng. concentration?

The M.Eng. proposal is attached.

Thanks,

M. Mohamed

"Our greatest fear should not be of failure but of succeeding at things that don't really matter"  
— *Francis Chan*

"Simplicity is the ultimate sophistication"  
— *Leonardo da Vinci*

<Computational\_EngineeringConc\_ MEng\_October2014.pdf>

**Subject:** Re: CSE MEng Proposal: Official Support email from the Physics Department

**Date:** Wednesday, January 21, 2015 at 9:12:18 PM Central Standard Time

**From:** Mohamed Mohamed (sent by mohamed.mohamed33@gmail.com  
<mohamed.mohamed33@gmail.com>)

**To:** Van Harlingen, Dale J

**CC:** Cooper, S Lance, Gamel, Marjorie M, Buttlar, William G, Aluru, Narayana R, McElroy, Rhonda Kay

Dear Dale.

Thank you very much. Your support is greatly appreciated!

p.s. You are right, resources will flow to the Department of Physics based on the CoE tuition distribution MOU for the M.Eng. program.

Kind regards,

M. Mohamed

"Our greatest fear should not be of failure but of succeeding at things that don't really matter"  
— Francis Chan

"Simplicity is the ultimate sophistication"  
— Leonardo da Vinci

On Wed, Jan 21, 2015 at 6:01 PM, Van Harlingen, Dale J <[dvh@illinois.edu](mailto:dvh@illinois.edu)> wrote:

Dear Lance and Mohammed.

Yes, I approve the inclusion of these Physics courses in the CSE professional master's concentration. Since this is a direct-paid MEng program, it is my understanding that some resources will flow to the Department of Physics for the courses in our department taken by the students in this program.

Dale Van Harlingen

---

Dale J. Van Harlingen

Professor and Head

Department of Physics

University of Illinois at Urbana-Champaign

---

**Subject:** Fwd: Re: Computational M.Eng. proposal  
**Date:** Wednesday, January 21, 2015 at 4:20:31 PM Central Standard Time  
**From:** Mohamed Mohamed (sent by mohamed.mohamed33@gmail.com <mohamed.mohamed33@gmail.com>)  
**To:** McElroy, Rhonda Kay  
**CC:** Buttlar, William G, Aluru, Narayana R

Hi Rhonda,

Here is the approval email by the AE Department Head.

----- Forwarded message -----

**From:** "Geubelle, Philippe H" <[geubelle@illinois.edu](mailto:geubelle@illinois.edu)>  
**Date:** Jan 21, 2015 4:10 PM  
**Subject:** Re: Computational M.Eng. proposal  
**To:** "Mohamed, Mohamed Y" <[mohamed@illinois.edu](mailto:mohamed@illinois.edu)>  
**Cc:** "Aluru, Narayana R" <[aluru@illinois.edu](mailto:aluru@illinois.edu)>, "Geubelle, Philippe H" <[geubelle@illinois.edu](mailto:geubelle@illinois.edu)>

Mohamed and Narayan:

AE is OK with AE410 and AE420 appearing on the current version of the proposal for Computational Engineering MEng. Other AE courses may be added later on, based on the discussion I will have with AE faculty.

Best,

Philippe

-----  
*Philippe H. Geubelle  
Bliss Professor and Head  
Dept. of Aerospace Engineering  
University of Illinois @ Urbana-Champaign  
306 Talbot Lab.  
104 South Wright Street  
Urbana, IL 61801; USA*

*E-mail : [geubelle@illinois.edu](mailto:geubelle@illinois.edu)  
Phone : (217) 244 7648  
Fax : (217) 244 0720  
<http://www.ae.illinois.edu/~geubelle/>*

*Director of Illinois Space Grant Consortium  
<http://www.ae.illinois.edu/ISGC/>*

---

**From:** Mohamed Mohamed <[mohamed@illinois.edu](mailto:mohamed@illinois.edu)>  
**Date:** Saturday, January 17, 2015 at 12:24 AM  
**To:** Philippe Geubelle <[geubelle@illinois.edu](mailto:geubelle@illinois.edu)>  
**Cc:** Narayana Aluru <[aluru@illinois.edu](mailto:aluru@illinois.edu)>  
**Subject:** Computational M.Eng. proposal

Dear Philippe,

Following our meeting last semester, we have submitted the CSE MEng concentration to the College for review (see attachment). We were told that we need to get an email approval from the AE Department Head for the

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## MEng with a Computational Engineering concentration

---

Jacobi, Anthony M <a-jacobi@illinois.edu>

Fri, Nov 14, 2014 at 10:58 AM

To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>, "Aluru, Narayana R" <aluru@illinois.edu>

Cc: "Smith, Kathryn A" <smith15@illinois.edu>, "Hagler, Katrina A" <kkappes2@illinois.edu>, "Ferreira, Placid Mathew" <pferreir@illinois.edu>, "Alleyne, Andrew G" <alleyne@illinois.edu>

Dear Mohamed and Narayan,

I am writing to confirm for you that MechSE enthusiastically supports the CSE proposal for an MEng concentration in Computational Engineering. We are very pleased to sponsor the proposal and to serve as the host department when the concentration is approved.

Please let me know if there are other ways we can support this effort.

Best regards,

Tony

Anthony M. Jacobi, Interim Associate Head of Graduate Programs and Research  
Kritzer Distinguished Professor, Mech. Science & Engineering  
Co-Director ACRC – An NSF-founded research center  
University of Illinois 217/333-4108 office  
1206 West Green Street 217/244-6534 fax  
Urbana, IL 61801 USA 217/649-3162 mobile

I may make you feel, but I can't make you think. –Ian Anderson

---

**Re: CSE MEng Proposal (ECE)**

---

**Sanders, William H** <whs@illinois.edu>

Wed, Oct 8, 2014 at 12:29 AM

To: "Aluru, Narayana R" <aluru@illinois.edu>, "Mohamed, Mohamed Y" <mohamed@illinois.edu>  
 Cc: "Franke, Steven J" <s-franke@illinois.edu>, "Carlson, Jennifer Merry" <merry@illinois.edu>, "Kudeki, Erhan" <erhan@illinois.edu>, "Beck, Jeannette Garinger" <jgbeck@illinois.edu>, "Wisehart, Christine Amanda" <cbender@illinois.edu>

Dear Narayan,

ECE has reviewed the proposal for a Graduate Concentration in Computational Science and Engineering within the College of Engineering M.Eng. degree program. We understand that students who enroll in the concentration may elect to take ECE courses to satisfy the academic requirements of this program. ECE is a signatory to the COE tuition distribution MOU for the M.Eng. programs and we expect to accommodate the additional enrollments associated with this new CSE program using additional resources provided under the tuition distribution MOU. ECE is pleased to offer our strong support for the proposed Graduate Concentration in CSE.

Best Regards,

Bill

[Quoted text hidden]

&gt;&gt; — \*Francis Chan\*

&gt;&gt;

&gt;&gt;

&gt;&gt; "Simplicity is the ultimate sophistication"

&gt;&gt;

&gt;&gt;

&gt;&gt;

&gt;&gt;

&gt;&gt;

&gt;&gt; On Thu, Aug 28, 2014 at 8:47 AM, R. Srikant &lt;rsrikant27@gmail.com&gt; wrote:

&gt;&gt;

&gt;&gt;&gt; Mohamed,

&gt;&gt;&gt; I heard from Steve Franke, our Associate Head, and he has no objections to the proposal. So I support the proposed concentration.

&gt;&gt;&gt; -Srikant

&gt;&gt;&gt;

&gt;&gt;&gt;

&gt;&gt;&gt; On Wed, Aug 27, 2014 at 4:10 PM, R. Srikant &lt;rsrikant27@gmail.com&gt; wrote:

&gt;&gt;&gt;

&gt;&gt;&gt;&gt; Mohamed,

&gt;&gt;&gt;&gt; The proposed MEng program looks good to me. I have forwarded it to our Graduate Associate Head expressing my support. But as a matter of protocol, I will wait to see if he has any comments, and will get back to you as soon as I hear from him.

&gt;&gt;&gt;&gt; -Srikant

&gt;&gt;&gt;&gt;

&gt;&gt;&gt;&gt;

&gt;&gt;&gt;&gt; On Wed, Aug 27, 2014 at 3:52 PM, Mohamed Mohamed &lt;mohamed@illinois.edu&gt;

&gt;&gt;&gt;&gt; wrote:

&gt;&gt;&gt;&gt;

&gt;&gt;&gt;&gt;&gt;

&gt;&gt;&gt;&gt;&gt; Thanks Srikant for the prompt feedback. I have changed the proposal to reflect your suggestions.

&gt;&gt;&gt;&gt;&gt;

&gt;&gt;&gt;&gt;&gt; Other than that, do we have your support for the concentration and the courses offered from the ECE side? We are trying to solicit support from the various steering committee members before we move forward.

---

**Re: CSE MEng Proposal (CEE Support)**

---

**Marinas, Benito Jose** <marinas@illinois.edu>

Sat, Oct 4, 2014 at 10:47 AM

To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>

Cc: "Liu, Liang Y" <lliu1@illinois.edu>, "Roesler, Jeffery Raphael" <jroesler@illinois.edu>, "Daley, Steven C" <scd@illinois.edu>

Dear Mohamed,

We have reviewed and discussed your proposal for a Professional MEng in CSE. CEE is glad to support your proposal.

Thanks for giving us the opportunity to review.

Best regards,

Benito

**Benito J. Mariñas**

Ivan Racheff Endowed Professor and Interim Head  
Department of Civil and Environmental Engineering  
Safe Global Water Institute Director  
University of Illinois at Urbana-Champaign

1114A Newmark Civil Engineering Laboratory  
205 North Mathews Avenue  
Urbana, Illinois 61801-2352  
Phone: (217) 333-6961  
E-mail: marinas@illinois.edu

Department Web Page: <http://environmental.cee.illinois.edu/>  
Safe Global Water Institute Web Page: <http://www.safeglobalwater.com/>

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**CSE MEng Proposal (Atmospheric Sciences Support)**

---

**Rauber, Robert M** <r-rauber@illinois.edu>  
To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>

Fri, Oct 3, 2014 at 1:29 PM

Dear Dr. Mohamed,

I write to give the full support of the Department of Atmospheric Sciences for your proposal. My understanding is that the proposal being considered is for a new program, namely an M.Eng in CSE, where students have the option to take ATMS 502 for credit toward their M.Eng in CSE degree.

Best wishes,

**Bob Rauber**  
Head, Department of Atmospheric Sciences



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**CSE MEng proposal (Astronomy support)**

---

Fields, Brian <bdfields@illinois.edu>  
To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>  
Cc: "Ricker, Paul Milton" <pmricker@illinois.edu>

Fri, Nov 7, 2014 at 10:43 AM

Dear Dr. Mohamed,

My understanding is that a proposal being considered for a new program, namely an M. Eng in CSE, where students have the option to take ASTR 510 for credit toward their M. Eng in CSE degree. I am pleased that Astronomy can participate in this way, and I write to give the Department's support for this.

Sincerely,  
Brian Fields

—  
Brian Fields  
Professor and Chair of Astronomy  
University of Illinois  
(217) 333-5529 | bdfields@illinois.edu

---

**CSE MEng Proposal (Physics Support)**

---

**Ceperley, David M** <ceperley@illinois.edu>  
To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>

Fri, Aug 29, 2014 at 7:37 AM

Hi Mohamed

Can you add CSE485/Phys 466/MSE485 to the list of courses.? It is a course titled "Atomic scale simulation" that covers in depth simulation methods for physics and materials science.

Otherwise I approve the document.

Thanks

=====  
David Ceperley  
Founder Professor, Physics Department  
University of Illinois Urbana-Champaign  
=====

---

**From:** mohamed <mohamed@illinois.edu>  
**Date:** Wednesday, August 27, 2014 10:26 AM  
**To:** David Ceperley <ceperley@illinois.edu>  
**Subject:** Re: CSE MEng Proposal (Physics Support)  
[Quoted text hidden]

---

**Fwd: CSE MEng Proposal: Official Support email from the Physics Department**

---

Cooper, S Lance <slcooper@illinois.edu>  
To: "Van Harlingen, Dale J" <dvh@illinois.edu>  
Cc: "Mohamed, Mohamed Y" <mohamed@illinois.edu>

Fri, Oct 3, 2014 at 2:19 PM

Hi Dale,

I received the following request from Computer Science and Engineering and I've also met with and talked with their representative, Mohamed Mohamed, whom I'm copying on this e-mail. CSE wants to put together a professional masters concentration that would include 3 of our courses as options (Math Methods 1, MM 2, and Phys 466 Atomic Scale Simulations). David Ceperley approves this concentration (see his e-mail correspondence below) and there should be no negative impact on our programs (e.g., there will be an insignificant increase in our course enrollment as a result of this).

Because they are including physics courses as part of the concentration, CSE needs you to send an e-mail approval of this proposed plan before they can move forward (see Mohamed's e-mail below). I recommend that you approve this concentration.

Please let me know if you have any questions about this.

Lance

---

**From:** mohamed@illinois.edu [mohamed@illinois.edu] [mohamed@illinois.edu]  
**Sent:** Tuesday, September 30, 2014 10:57 AM  
**To:** Cooper, S Lance  
**Subject:** Fwd: CSE MEng Proposal: Official Support email from the Physics Department

[Quoted text hidden]

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 CSE Conc\_ MEng\_final review092614.pdf  
260K

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**CSE MEng Proposal (IESE Support)**

---

**Nagi, Rakesh** <nagi@illinois.edu>

Tue, Sep 2, 2014 at 10:50 PM

To: "Mohamed, Mohamed Y" <mohamed@illinois.edu>, "Kim, Harrison Hyung Min" <hmkim@illinois.edu>

Dear Mohamed,

ISE is glad to support this proposal and offer the IE mentioned courses for the MEng CSE students. Please note that the frequency and capacity of these courses will have to be discussed ahead of time.

Thank you for preparing a strong proposal; I wish you the best with its approval.

Best,  
Rakesh

--

Donald Biggar Willett Professor and Head  
Department of Industrial & Enterprise Systems Engineering  
University of Illinois at Urbana-Champaign  
117 Transportation Building, MC-238  
104 South Mathews Avenue  
Urbana, IL 61801  
Email: nagi@illinois.edu  
Tel: +1 (217) 244 3848 Fax: +1 (217) 244 5705

---

**From:** Mohamed Mohamed <mohamed@illinois.edu>

**Date:** Tuesday, September 2, 2014 at 5:34 PM

**To:** "Kim, Harrison Hyung Min" <hmkim@illinois.edu>

**Cc:** Rakesh Nagi <nagi@illinois.edu>

[Quoted text hidden]

[Quoted text hidden]

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## CSE MEng Proposal (MatSE Support)

---

**matse-head** <matse-head@illinois.edu>

Tue, Sep 30, 2014 at 1:10 PM

To: "Trinkle, Dallas" <dtrinkle@illinois.edu>, "Mohamed, Mohamed Y" <mohamed@illinois.edu>, "Aluru, Narayana R" <aluru@illinois.edu>

I and the Department of Materials Science and Engineering support the CSE MEng proposal.

David C.

Willett Professor and Head

Department of Materials Science and Engineering

<http://www.matse.illinois.edu/>

---

**From:** Trinkle, Dallas

**Sent:** Tuesday, September 30, 2014 1:01 PM

**To:** matse-head

**Subject:** Fwd: CSE MEng Proposal (MatSE Support)

Apparently they need an email from you... Cheers; --d

—

Dallas R. Trinkle

Associate Professor

Materials Science and Engineering

University of Illinois, Urbana-Champaign

<http://dtrinkle.matse.illinois.edu>

Begin forwarded message:

**From:** Mohamed Mohamed <mohamed@illinois.edu>

**Date:** September 30, 2014 at 12:39:58 PM CDT

**To:** "Trinkle, Dallas" <dtrinkle@illinois.edu>

**Cc:** "Aluru, Narayana R" <aluru@illinois.edu>

**Subject:** Re: CSE MEng Proposal (MatSE Support)

Dear Dallas,

**Subject:** Re: Do you approve MechSE/CSE to use the following CS courses in the MENG proposal?

**Date:** Tuesday, January 27, 2015 at 12:52:23 PM Central Standard Time

**From:** Rutenbar, Rob

**To:** McElroy, Rhonda Kay

**CC:** Darnall, Aaron R, Forsyth, David Alexander, DeJong, Gerald F II, Erickson, Jeff G

Approved, based on our meeting today with CSE and COE graduate program leadership. I'm including and memorializing in this approval response the discussion we had at which all parties — CS, CSE, COE — agreed that the proposed CompEng MEng would not interfere with, and would indeed be complementary to, an envisioned MEng in High Performance Computing (precise name TBD, of course) that would focus more on fundamental tools, numerics, platforms, parallelism, software issues, etc, and less on discipline-specific applications.

I'm CCing CS Associate Heads and Asst Director for Admin on this reply.

-rob rutenbar

-----  
Rob A. Rutenbar  
Bliss Professor and Head  
Department of Computer Science  
University of Illinois at Urbana-Champaign  
2232 Siebel Center, MC-258, 201 North Goodwin Ave, Urbana 61801  
Tel 217-333-3373 [rutenbar@illinois.edu](mailto:rutenbar@illinois.edu)  
Assistant: Karen Stahl ([kstahl@illinois.edu](mailto:kstahl@illinois.edu))

On Jan 27, 2015, at 11:12 AM, McElroy, Rhonda Kay <[rmcelroy@illinois.edu](mailto:rmcelroy@illinois.edu)> wrote:

Good Morning, Rob -  
MechSE is proposing with CSE to have a MENG in Engineering with a concentration in Computational Engineering. In the main core courses, they are proposing that students are select the following CS courses.  
Computational Methods (minimum of 4 hours): TAM 470/CSE 450, CS 450/CSE 401, ATMS 502/CSE 566, or ME 471/CSE 451/AE 420  
Parallel/Ubiquitous Computing (minimum of 4 hours): CS 420/CSE 402 or ECE 408/CS 483/CSE 408  
Can you please respond to this email to let me know you approve of these courses being in this proposal and that you overall support this concentration being established? Thank you!  
Rhonda

-----  
Rhonda McElroy

Director of Graduate and Professional Programs  
(217) 244-2745  
[rmcelroy@illinois.edu](mailto:rmcelroy@illinois.edu)  
College of Engineering @ ILLINOIS  
Engineering Hall 405  
1308 West Green Street  
Urbana, IL 61801

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

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



RECEIVED  
MAY 04 2015  
GRADUATE COLLEGE

April 30, 2015

Associate Dean John Hart  
Graduate College  
204 Coble Hall  
MC-322

Via: Andreas Cangellaris, Engineering College

Dear Dean Hart:

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

**Establish a Graduate Concentration in "Computational Science and Engineering"**

Attached is a copy of the request

Sincerely yours,

A handwritten signature in cursive script that reads "David N. Ruzic".

David Ruzic, Vice Chair  
Executive Committee

Approval Recommended:

A handwritten signature in cursive script, likely belonging to Andreas Cangellaris.

Andreas Cangellaris, Dean  
College of Engineering

4-30-2015

Date

DR/rd

Bill Buttlar  
Rhonda McElroy  
David Ruzic  
Narayana Aluru



UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

EP.16.13

Office of the Provost and Vice Chancellor  
for Academic Affairs

Swanlund Administration Building  
601 East John Street  
Champaign, IL 61820



August 5, 2015

Bettina Francis, Chair  
Senate Committee on Educational Policy  
Office of the Senate  
228 English Building, MC-461

Dear Professor Francis:

Enclosed is a copy of a proposal from the College of Engineering and the Graduate College to establish a Graduate Concentration in Computational Engineering within the Major in Engineering in the Master of Engineering degree.

Sincerely,

A handwritten signature in cursive script that reads 'Kathryn A. Martensen'.

Kathryn A. Martensen  
Assistant Provost

Enclosures

c: A. Cangellaris  
W. Buttlar  
P. Ferreira  
R. McElroy  
M. Mohamed  
J. Hart  
A. McKinney

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

Graduate College

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



RECEIVED

MAY 21 2015

Office of the Provost

Executive Committee

May 19, 2015

2014-2015 Members

Kathy Martensen  
Office of the Provost  
207 Swanlund MC-304

Sarah Lubienki, Interim  
Dean & Chair  
Graduate College

Dear Kathy,

Members

Enclosed please find the proposal to establish a Graduate Concentration in Computational Engineering within the Major in Engineering in the Master of Engineering Degree.

Abbas Aminmansour  
Architecture

The proposal was received by the Graduate College on May 4, 2015. It was forwarded to the Executive Committee for review at the May 12, 2015 meeting. The Executive Committee noted that the proposal includes letters of agreement from the affiliated departments. In addition, the table included with the proposal clearly outlines the general requirements of the M. Eng. in Engineering and how they are refined by the proposed concentration.

Dilip Chhajed  
Business Administration

The proposal was approved by the Executive Committee at the May 12, 2015 meeting.

Wojciech Chodzko-Zajko  
Kinesiology & Community  
Health

I send the proposal to you now for further review.

Susan Cole  
Social Work

Sincerely,

John D'Angelo  
Mathematics

John C. Hart  
Associate Dean  
Graduate College

Nicki Engeseth  
Food Science & Human  
Nutrition

Susan Fowler  
Special Education

Marie Heffeman  
Psychology

c: W. Buttlar  
P. Ferreira  
R. McElroy  
A. McKinney

Paul Hergenrother  
Chemistry

Jack Juvik  
Crop Sciences

Samantha Knoll  
Mechanical Science &  
Engineering

John Lambros  
Aerospace Engineering

Glauco Paulino  
Civil & Environmental  
Engineering

Dana Rabin  
History

Carla Santos  
Recreation, Sport and  
Tourism

Renée Trilling  
English

**Senate Educational Policy Committee  
Proposal Check Sheet**

**PROPOSAL TITLE** (Same as on proposal): Establish a Graduate Concentration in Computational Engineering within the Major in Engineering in the Master of Engineering Degree in the College of Engineering

**PROPOSAL TYPE** (select all that apply below):

A.  Proposal for a NEW or REVISED degree program. Please consult the Programs of Study Catalog for official titles of existing degree programs.

1. Degree program level:

Graduate                       Professional                       Undergraduate

2.  Proposal for a new degree (e.g. B.S., M.A. or Ph.D.):

Degree name, "e.g., Bachelor of Arts or Master of Science": \_\_\_\_\_

3.  Proposal for a new or revised major, concentration, or minor:

New or  Revised Major in (name of existing or proposed major): \_\_\_\_\_

New or  Revised Concentration in (name of existing or proposed concentration):

Computational Engineering

New or  Revised Minor in (name of existing or proposed minor): \_\_\_\_\_

4.  Proposal to rename an existing major, concentration, or minor:

Major                       Concentration                       Minor

Current name: \_\_\_\_\_

Proposed new name: \_\_\_\_\_

5.  Proposal to terminate an existing degree, major, concentration, or minor:

Degree                       Major                       Concentration                       Minor

Name of existing degree, major, or concentration: \_\_\_\_\_

6.  Proposal involving a multi-institutional degree:

New                       Revision                       Termination

Name of existing Illinois (UIUC) degree: \_\_\_\_\_

Name of non-Illinois partnering institution: \_\_\_\_\_

Location of non-Illinois partnering institution:

State of Illinois       US State: \_\_\_\_\_       Foreign country: \_\_\_\_\_

- B.  Proposal to create a new academic unit (college, school, department, program or other academic unit):

Name of proposed new unit: \_\_\_\_\_

- C.  Proposal to rename an existing academic unit (college, school, department, or other academic unit):

Current name of unit: \_\_\_\_\_

Proposed new name of unit: \_\_\_\_\_

- D.  Proposal to reorganize existing units (colleges, schools, departments, or program):

1.  Proposal to change the status of an existing and approved unit (e.g. change from a program to department)

Name of current unit including status: \_\_\_\_\_

2.  Proposal to transfer an existing unit:

Current unit's name and home: \_\_\_\_\_

Proposed new home for the unit: \_\_\_\_\_

3.  Proposal to merge two or more existing units (e.g., merge department A with department B):

Name and college of unit one to be merged: \_\_\_\_\_

Name and college of unit two to be merged: \_\_\_\_\_

Proposed name and college of new (merged) unit: \_\_\_\_\_

4.  Proposal to terminate an existing unit:

Current unit's name and status: \_\_\_\_\_

- E.  Other educational policy proposals (e.g., academic calendar, grading policies, etc.)

Nature of the proposal: \_\_\_\_\_

Revised 10/2012

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

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



April 30, 2015

RECEIVED  
MAY 04 2015  
GRADUATE COLLEGE

Associate Dean John Hart  
Graduate College  
204 Coble Hall  
MC-322

Via: Andreas Cangellaris, Engineering College

Dear Dean Hart:

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

**"Establish a Graduate Concentration in Computational Engineering within the Major in Engineering in the Master of Engineering Degree in the College of Engineering"**

Attached is a copy of the request

Sincerely yours,

A handwritten signature in cursive script that reads "David A. Ruzic".

David Ruzic, Vice Chair  
Executive Committee

Approval Recommended:

A handwritten signature in cursive script, likely belonging to Andreas Cangellaris.

Andreas Cangellaris, Dean  
College of Engineering

4-30-2015

Date

DR/rd

Bill Buttler  
Rhonda McElroy  
David Ruzic  
Placid Ferreira