

# UNIVERSITY FACULTY SENATE FORMS

## Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: Michael Santare phone number x-2246

Department: Mechanical Engineering email address santare@udel.edu

Date: November 12, 2010

Action: Policy change for graduate program  
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term 11 F  
(use format 04F, 05W)

Current degree \_\_\_\_\_  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: PhD, MSME, MEM  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name: \_\_\_\_\_  
Proposed new name for revised or new major / minor / concentration / academic unit  
(if applicable)

### Revising or Deleting:

Undergraduate major / Concentration: \_\_\_\_\_  
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor: \_\_\_\_\_  
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change: Program Policy Statement Attached  
(Must attach your Graduate Program Policy Statement)

Graduate Program of Study: Ph.D. in Mechanical Engineering; Master of Science in Mechanical Engineering (MSME); and Master of Engineering: Mechanical (MEM)  
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration: \_\_\_\_\_

**Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.**

**List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?**

(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter "None")

**NONE**

**Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education:** <http://www.ugs.udel.edu/gened/>

**NOT APPLICABLE**

**Identify other units affected by the proposed changes:**

(Attach permission from the affected units. If no other unit is affected, enter "None")

**NONE**

**Describe the rationale for the proposed program change(s):**

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

The field of Mechanical Engineering is quickly changing due to global pressures and the impact of new and emerging technologies. Consequently, the faculty in Mechanical Engineering at UD is becoming increasingly diverse in its research pursuits, working in areas such as nanotechnology, biomedical engineering, energy conversion and environment, which are outside the traditional mainstream of mechanical engineering. This has led to the desire to create a more flexible graduate program, so that students with different backgrounds and interests can study and conduct research in these areas that cross traditional academic boundaries while earning their graduate degree in mechanical engineering. At the same time, the faculty wanted to have a way to assess the students' research potential early on in their Ph.D. studies.

This proposal addresses these concerns by changing the format of the Ph.D. Qualifying Examination and in so doing allows a simplification of the graduate degree program rules. The new Qualifying Exam eliminates one of three existing written qualifying exams and replaces it with a short oral presentation of selected papers in the students' research area of interest. This "Research Aptitude Exam" is designed to test a key element of the students' research potential; the ability to read, understand and interpret the literature. In addition, since each student's exam is based on his or her own research area, it allows for more flexibility in coursework selection. Therefore, as an adjunct to the modification of the qualifying exam, the department has also decided to simplify the course requirements by eliminating the "Template" wording from its policy statements for all three degrees.

This style of exam is currently used at some other departments around the US and at UD, and the department has tailored this particular Research Aptitude Exam to fit its current student population as well as to promote its strategic goals for the future.

**Program Requirements:**

(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and include a side-by-side comparison of the credit distribution before and after the proposed change.)

**See attached Graduate Program Policy documents**

**ROUTING AND AUTHORIZATION:** (Please do not remove supporting documentation )

Department Chairperson *[Signature]* Date 11/29/2010  
Dean of College *[Signature]* Date 12/8/10  
Chairperson, College Curriculum Committee *[Signature]* Date mtg 11/22/2010  
Chairperson, Senate Com. on UG or GR Studies \_\_\_\_\_ Date \_\_\_\_\_  
Chairperson, Senate Coordinating Com. \_\_\_\_\_ Date \_\_\_\_\_  
Secretary, Faculty Senate \_\_\_\_\_ Date \_\_\_\_\_  
Date of Senate Resolution \_\_\_\_\_ Date to be Effective \_\_\_\_\_  
Registrar \_\_\_\_\_ Program Code \_\_\_\_\_ Date \_\_\_\_\_  
Vice Provost for Academic Affairs & International Programs \_\_\_\_\_ Date \_\_\_\_\_  
Provost \_\_\_\_\_ Date \_\_\_\_\_  
Board of Trustee Notification \_\_\_\_\_ Date \_\_\_\_\_

Revised 02/09/2009 /khs

## Proposed Policy Statement

### **MASTER of ENGINEERING: MECHANICAL (MEM)**

The Master of Engineering: Mechanical (MEM) program consists of 30 credit hours of graduate level coursework. Coursework must be completed with a grade point average of 3.0 or higher. The requirements are designed to provide a general program and to allow for some concentration of study within Mechanical Engineering. It will be possible to complete this program taking courses in the late afternoon, early evening, and/or in a distance format.

Engineering Outreach can help facilitate part-time graduate education. This degree is not available to students who have been enrolled in the MSME degree program.

#### Course Requirements

A. The following four courses are required (12 credits):

- MEEG 690 Intermediate Engineering Mathematics
- Three from the following list:
  - MEEG 610 Intermediate Solid Mechanics
  - MEEG 620 Intermediate Dynamics
  - MEEG 630 Intermediate Fluid Mechanics
  - MEEG 640 Intermediate Heat Transfer
  - MEEG 683 Orthopedic Biomechanics

Students may petition the Graduate Committee to substitute a more advanced (e.g., 800-level) course on the same topic for one of these required courses.

B. One additional graduate level course (3 credits) in mathematics or numerical methods. The student makes this selection with the documented approval of the Department's Graduate Committee which has the authority to decide on acceptable courses.

C. One additional graduate level course (3 credits) in Mechanical Engineering. Three credits of MEEG 868 Research can be used toward this requirement. The student makes this selection with the documented approval of the department's Graduate Committee which has the authority to decide on acceptable courses.

D. Four additional graduate level courses (12 credits) in engineering, mathematical, physical or biological sciences or business and economics. The student makes these selections with the documented approval of the department's Graduate Committee which has the authority to decide on acceptable courses.

## Current Policy Statement

### **MASTER of ENGINEERING: MECHANICAL (MEM)**

The Master of Engineering: Mechanical (MEM) program consists of 30 credit hours of graduate level coursework. Coursework must be completed with a grade point average of 3.0 or higher. The requirements are designed to provide a general program and to allow for some concentration of study within Mechanical Engineering. It will be possible to complete this program taking courses in the late afternoon, early evening, and/or in a distance format.

Engineering Outreach can help facilitate part-time graduate education. This degree is not available to students who have been enrolled in the MSME degree program.

#### Course Requirements

A. The following five courses are required (15 credits):

- MEEG 690 Intermediate Engineering Mathematics
- Two from the following list of '*traditional*' mechanical engineering courses:
  - MEEG 610 Intermediate Solid Mechanics
  - MEEG 620 Intermediate Dynamics
  - MEEG 630 Intermediate Fluid Mechanics
  - MEEG 640 Intermediate Heat Transfer
- Two additional courses either from the list immediately above or from a list (template) of approved ME 'non-traditional' mechanical engineering courses.

Students may petition the Graduate Committee to substitute a more advanced (e.g., 800-level) course on the same topic for one of these required courses.

B. One additional graduate level course (3 credits) in mathematics or numerical methods. The student makes this selection with the documented approval of the Department's Graduate Committee which has the authority to decide on acceptable courses.

C. One additional graduate level course (3 credits) in Mechanical Engineering. Three credits of MEEG 868 Research can be used toward this requirement. The student makes this selection with the documented approval of the department's Graduate Committee which has the authority to decide on acceptable courses.

D. Three additional graduate level courses (9 credits) in engineering, mathematical, physical or biological sciences or business and economics. The student makes these selections with the documented approval of the department's Graduate Committee which has the authority to decide on acceptable courses.