SPECIAL REPORT

OF THE

ACADEMIC MATTERS
AND GRADUATE COUNCILS

concerning

CREATION OF AN ACCELERATED
MASTERS IN MECHANICAL ENGINEERING
(#4752)

Presented at the
778th Regular Meeting of the Faculty Senate
April 26, 2018

COUNCIL MEMBERSHIP

ACADEMIC MATTERS COUNCIL

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This proposal would allow up to 9 credits taken while a student is an undergraduate to be applied toward the Masters degree, provided that none of the credits are used to meet Bachelors degree requirements. This fits with the policy on accelerated Masters programs.
The Graduate Council recommends approval of this proposal.

Briefly describe the Proposal

We are proposing to develop an accelerated masters degree in Mechanical Engineering. The proposed degree program will allow direct admission of Mechanical Engineering students with a GPA of over 3.5 into a course-work only MS degree program without requiring GRE test scores or letters of recommendation.

Provide a brief overview of the process for developing the proposal.

The proposal was developed by the graduate committee within MIE in consultation with the Graduate Program Director and the Department Head.

Purpose and Goals

Describe the proposal's purpose and the particular knowledge and skills to be acquired and provide a rationale for creating this accelerated degree program.

The purpose of this program is to create a pipeline of our own highly talented and motivated undergraduate students into our graduate program. Although many of these students will leave after receiving their MS degree, we believe that this program will also feed a number of excellent students into our PhD program as well. This request is motivated to not only expand our graduate program, with the ensuing added revenue, but also enhance the quality of our graduate pool. We believe with the increasing complexity of mechanical systems and the increasing emphasis that employers place on graduate education, the Master's degree will enhance the marketability of our students.

Accelerated Masters Information

Does the accelerated master's option apply to all master's degrees in this field, or only to certain tracks or concentrations?

Yes, the accelerated masters option will apply to all MS degrees in Mechanical Engineering.

What type of degree program does this accelerated master's option pertain to?

Note: second and third require separate approval.

An existing degree

Describe the projected course sequence for this degree and the timeline to completion for students.

The expectation is that the accelerated MS degree can be completed in one to one and a half years. To complete the MS degree, 30 course credits are required. To complete that in one year, five courses per semester would be required. To complete that in one and a half years, one semester of 4 courses and two of 3 courses would be required. To help accelerate the program for our own students, up to 9 credits of graduate level coursework taken during the student's
undergraduate program and not used to fulfill their bachelors degree can be transferred directly to the MS degree. By transferring some or all of these 9 credits completion of the MS degree in one year is much more feasible.

The specific classes taken are strongly dependent on discipline and concentration. Here is an example for a student getting an MS in Mechanical Engineering with a concentration in Thermo-Fluids:

**Fall**

- MIE 573 – Engineering Windpower Systems
- MIE 601 – Advanced Thermodynamics
- MIE 603 – Advanced Numerical Analysis
- MIE 607 – Advanced Fluid Mechanics
- MIE 697FS – Fluid Structure Interactions

**Spring**

- MIE 570 – Solar and Direct Energy Conversion
- MIE 604 – Computational Fluid Dynamics
- MIE 673 – Wind Turbine Design
- MIE 701 – Advanced Thermodynamics
- MIE 707 – Viscous Fluids

*What undergraduate degree program is this accelerated masters associated with, if any.*

**BS in Mechanical Engineering**

*If this proposal requires no additional resources, say so and briefly explain why. If this proposal requires additional resources, explain how they will be paid for. For proposals involving instruction, indicate how many new enrollments are expected and whether the courses have room to accommodate them.*

No additional resources are needed. We already have an MS program in Mechanical Engineering and this would simply be an extension of the existing program.

Provide the curriculum to the applicable masters degree as it currently appears in the Graduate Bulletin and explain how this curriculum will be scheduled over the student's undergraduate and graduate careers. Note that total number of credits must be 30 plus the minimum number required for undergraduate degree (generally 120, making total number of credits required 150).

Note: For Master's programs under 36 credits, a maximum of 9 graduate-level credits taken as an undergraduate may be applied to both degrees. For Master's programs over 36 credits, a maximum of 12 graduate-level credits taken as an undergraduate may be applied to both degrees.

*From Graduate Bulletin:*

“Students must select either a thesis or non-thesis option upon enrolling in a program.”
The Master of Science program in Mechanical Engineering thesis option requires that a student complete a total of 30 credits, of which 12 credits are required in approved core courses. A 6- to 9-credit thesis or project is required. The remaining credits are electives to be taken from departmental research groupings.

The requirements of the Coursework option are:

1) The student must successfully complete at least 30 graduate (500 level or above) credits. Thesis or project credits do not count towards this total.

2) At least 21 credits must be at the 600 level or above.

3) At least 21 credits must be Mechanical and Industrial Engineering courses.

4) A maximum of 6 credits can be for independent study.

5) The student must take four of the MIE Core courses.

6) Credits that apply to any other degree program, with the exception of graduate certificate program credits, cannot be applied to this degree.

Master's students who select the coursework option will not usually be considered for assistantships or tuition waivers.”

The masters degree requires 30 credits. Of those 30 credits, 9 credits can be transferred from the undergraduate degree provided that they were not used to fulfill the bachelor’s degree requirements.

Who can apply to pursue this accelerated master’s degree?
(UMass students, Five College Students, Students in specific degree programs, etc.)

UMass students in Mechanical Engineering

Are there any admissions exceptions to this degree program, such as a waiver of the GRE requirements?

Yes
Comments: Waiver of the GRE requirements and waiver of the letters of recommendation requirements.

MOTION: That the Faculty Senate approve the Creation of an Accelerated Masters in Mechanical Engineering, as presented in Sen. Doc. No. 18-065.