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PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR/MINOR)

SUBMITTED BY:

Department	Mechanical Engineering	College/School	CEM
Prepared by	Chuen-Sen Lin	Phone	5126
Email Contact	clin@alaska.edu	Faculty Contact	Chuen-Sen Lin

See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

DEGREE PROGRAM	Mechanical Engineering
Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)	B.S./M.S.

A. CHANGE IN DEGREE REQUIREMENTS: (Brief statement of program/degree changes and objectives)

The changes include:

1. The addition of a 1-credit new degree requirement course.

The objectives of the changes are:

1. To improve the program by enhancing engineering design teaching.

B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:

Major – B.S./M.S. Degree:

1. Complete the following admission requirements:
 - a. ME major (junior preferred) or senior standing.
 - b. GPA 3.25 or above (based on minimum of 24 credits in ME major requirements). Students must maintain a cumulative GPA of 3.0 to remain in the program.
 - c. Submit three letters of reference.
 - d. Submit GRE (general) scores.
 - e. Submit a study goal statement.
 - f. Submit a UAF graduate application for admission.
2. Complete the general university requirements (See page 131).
3. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X and PHYS F212X.)
4. Complete the master's degree requirements (page 202).
5. Complete the following program (major) requirements:

ES F101-Introduction to Engineering	3
ES F201-Computer Techniques	3
ES F209-Statics	3
ES F210-Dynamics	3
ES F301-Engineering Analysis	3
ES F307-Elements of Electrical Engineering	3
ES F331-Mechanics of Materials	3
ES F341-Fluid Mechanics	4
ES F346-Basic Thermodynamics	3
ESM F450W-Economic Analysis and Operations	3
MATH F202X-Calculus III	4
MATH F302-Differential Equations	3
ME F302-Dynamics of Machinery	4
ME F308-Measurement and Instrumentation	3
ME F313-Mechanical Engineering Thermodynamics	3
ME F321-Industrial Processes	3
ME F334-Elements of Material Science/Engineering	3
ME F403-Machine Design	3
ME F408-Mechanical Vibrations	3
ME F415W-Thermal Systems Laboratory	3
ME F441-Heat and Mass Transfer	3
ME F487W&O-Design project	3

6. Complete the following M.S. program (major) requirements:

ME F608-Advanced Dynamics	3
ME F631-Advanced Mechanics of Materials	3
ME F634-Advanced Materials Engineering	3
ME F641-Advanced Fluid Mechanics	3
ME F642-Advanced Heat Transfer	3

7. Complete the thesis or non-thesis requirements:

Thesis	
ME F699-Thesis	6
Electives	9
(Electives approved by student's advisory committee with at least 3 credits at the graduate level)	
Non-Thesis	
ME F698-Project	3
Electives	12
(Electives approved by student's advisory committee with at least 6 credits at the graduate level)	

8. Minimum credits required for both degrees 15†

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified for exceeding the seven year limit, a mechanical engineering B.S. degree will be awarded if: 1) Course work is completed in 10 years, and 2) the student meets all ME B.S. requirements.

C. PROPOSED REQUIREMENTS AS IT WILL APPEAR IN THE CATALOG WITH THESE CHANGES:
 (Underline new wording strike through old wording and use complete catalog format)

B.S./M.S. Degree:

Major – B.S./M.S. Degree:

1. Complete the following admission requirements:
 - a. ME major (junior preferred) or senior standing.
 - b. GPA 3.25 or above (based on minimum of 24 credits in ME major requirements). Students must maintain a cumulative GPA of 3.0 to remain in the program.
 - c. Submit three letters of reference.
 - d. Submit GRE (general) scores.
 - e. Submit a study goal statement.
 - f. Submit a UAF graduate application for admission.

2. Complete the general university requirements (See page 131).

3. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X and PHYS F212X.)

4. Complete the master's degree requirements (page 202).

5. Complete the following program (major) requirements:

ES F101-Introduction to Engineering	3
ES F201-Computer Techniques	3
ES F209-Statics	3
ES F210-Dynamics	3
ES F301-Engineering Analysis	3
ES F307-Elements of Electrical Engineering	3
ES F331-Mechanics of Materials	3
ES F341-Fluid Mechanics	4
ES F346-Basic Thermodynamics	3
ESM F450W-Economic Analysis and Operations	3
MATH F202X-Calculus III	4
MATH F302-Differential Equations	3
ME F302-Dynamics of Machinery	4
ME F308-Measurement and Instrumentation	3
ME F313-Mechanical Engineering Thermodynamics	3
ME F321-Industrial Processes	3
ME F334-Elements of Material Science/Engineering	3
ME F403-Machine Design	3
ME F408-Mechanical Vibrations	3
ME F415W-Thermal Systems Laboratory	3
ME F441-Heat and Mass Transfer	3
<u>ME F486- Senior Design</u>	<u>1</u>
ME F487W&O-Design project	3

6. Complete the following M.S. program (major) requirements:

ME F608-Advanced Dynamics	3
ME F631-Advanced Mechanics of Materials	3
ME F634-Advanced Materials Engineering	3
ME F641-Advanced Fluid Mechanics	3
ME F642-Advanced Heat Transfer	3

7. Complete the thesis or non-thesis requirements:

Thesis	
ME F699-Thesis	6
Electives	9
(Electives approved by student's advisory committee with at least 3 credits at the graduate level)	
Non-Thesis	
ME F698-Project	3
Electives	12
(Electives approved by student's advisory committee with at least 6 credits at the graduate level)	

8. Minimum credits required for both degrees ~~15~~ **2**

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified for exceeding the seven year limit, a mechanical engineering B.S. degree will be awarded if: 1) Course work is completed in 10 years, and 2) the student meets all ME B.S. requirements.

D. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

No impact will result from adding the 1-credit Senior Design course.

E. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?
 Include information on the Programs/Departments contacted (e.g., email, memo)

Adding the 1-credit Senior Design course will not affect any programs/departments besides the Mechanical Engineering department.

F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

Description of the student learning outcomes assessment process.)

The Mechanical Engineering program will be continually assessed using the evaluation process agreed upon by the ME faculty.

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you drop a course, is it because the material is covered elsewhere? Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the program is not compromised as a result.

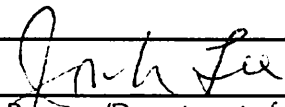
The objectives of the changes are:

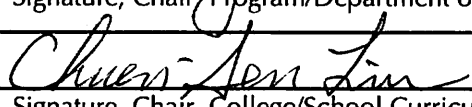
1. To improve the program by enhancing engineering design teaching.

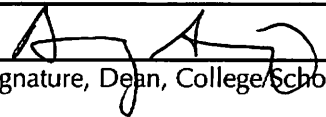
1. The current program has only one required course, which is dedicated completely to design project. This is a one-semester, 3-credit design course (ME487 Design Project). Students are required to complete group design projects (on average, 3 students per group). Each group project spans the whole design process, from design definition to prototype fabrication. Based on the previous experience of faculty members and students, one semester is not enough time for students to finish their projects with the desired quality of work for every design step within the whole design process. This is even more critical in the success or failure of projects which involve sophisticated tasks, creative ideas, significant procurements, etc.

Taking a 1-credit Senior Design course before the Design Project course would let students learn more about the design process and design tools, and select and prepare their design projects earlier. By extending a one semester design project to two semesters, it is expected that students will benefit by having more time to learn about design technology and then perform better on their design projects.

APPROVALS:


Signature, Chair, Program/Department of: Mechanical Engineering Date 5/16/2012


Signature, Chair, College/School Curriculum Council for: _____ Date 09/05/2012


Signature, Dean, College/School of: CEM Date 9/13/12

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Signature, Chair, UAF Faculty Senate Curriculum Review Committee Date _____