COLLEGE OF ENGINEERING
COURSE AND CURRICULUM CHANGES

Approved at the College of Engineering
Course and Curriculum Meeting

February 5, 2015

Edwards Conference Room
9:00

Undergraduate/Graduate

EXPEDITED

Contact Person: James Goddard
532-3569
e-mail: goddard@ksu.edu
Units that may be directly impacted by these changes:

Please provide the sponsors of a proposal change with any information regarding fiscal or programmatic impact on your department, program or students
Expedited CURRICULUM PROPOSALS

Department of Mechanical and Nuclear Engineering

FROM: (Current list of courses for the curriculum, curriculum description, and admission criteria. Be sure to use current catalog information)

TO: (Proposed list of courses for the curriculum, curriculum description, and admission criteria.)

Master's degree requirements

The department offers three degree options at the master’s level:

Thesis Option

The Program of Study should include a minimum of 30 credit hours, with the following additional requirements:

Required Curriculum

1. The candidate should earn credit for at least 6 credit hours of Master’s Thesis Research (ME 899 or NE 899) culminating in a successfully defended thesis.

2. At least 18 hours, of the required minimum of 30 hours, should be at the 700 level and above, including ME 800 Graduate Seminar/Research Paper, and the thesis/research and the report/problems hours required by the thesis and report options.

3. The MS candidate must satisfy the 75% attendance requirement (0 credit hour) in at least two semesters of ME 800 Graduate Seminar/Research Paper. (refer to ME 800 course requirements)

Master's degree requirements

The department offers three degree options at the master’s level:

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The Program of Study should include a minimum of 30 credit hours, with the following additional requirements:

Required Curriculum

1. The candidate should earn credit for at least 6 credit hours of Master’s Thesis Research (ME 899 or NE 899) culminating in a successfully defended thesis.

2. At least 18 hours, of the required minimum of 30 hours, should be at the 700 level and above, including ME 800 Graduate Seminar/Research Paper, and the thesis/research and the report/problems hours required by the thesis and report options.

3. The MS candidate must satisfy the 75% attendance requirement for on-campus students in at least two semesters of ME 800 (0 credit hours). Graduate Seminar/Research Paper. Refer to ME 800 course requirements.
4. Courses at the 600-level may be included in the Program of Study, but 500-level courses in the student’s major area are expected to have been completed as undergraduate prerequisites to graduate study or as undergraduate deficiency courses assigned upon admission. The use of 500-level supporting courses in master’s programs is therefore restricted as follows:

(a) No course in the student’s major area may be at the 500 level

(b) normally no more than 6 credit hours may be at the 500 level

5. A minimum of 18 credit hours of graded coursework (i.e., courses in which a letter grade is assigned)

6. The graded coursework should include at least one 3 credit hour course in engineering mathematics or applied mathematical analysis. Courses that may be used to meet this requirement are:

- Math 616
- MATH 632 – Elementary Partial Differential Equations Credits: (3)
- MATH 713 – Advanced Applied Matrix Theory Credits: (3)
- MATH 740 – Calculus of Variation Credits: (3)
- MATH 745 – Ordinary Differential Equations Credits: (3)
- MATH 855 – Methods of Applied Mathematics I Credits: (3)
- MATH 856 – Methods of Applied Mathematics II Credits: (3)
- MATH 864 – Theory of Ordinary Differential Equations I Credits: (3)
- Math 865
- Math 866
• Math 867
• ME 760 – Engineering Analysis I Credits: (3)
• ME 860 – Engineering Analysis II Credits: (3)
• PHYS 801 – Mathematical Methods of Physics Credits: (3)
• PHYS 802 – Computational Methods in Physics Credits: (4)

Options for Completing 30 Credit Hour Requirement

In addition to the minimum graded coursework requirement (18 credit hours) and the minimum Master’s Thesis Research requirement (6 credit hours), the candidate must complete 6 more credit hours to meet the minimum credit requirement of 30 credit hours. This can be done through any combination of the following:

- Up to 2 additional credit hours of Master’s Thesis Research (ME899 or NE899)
- Up to 3 credit hours of ME 800 Seminar/Research Paper (refer to ME800 course requirements)
- Up to 3 credit hours of independent study
- Up to 6 credit hours of additional coursework

Report Option

• The Program of Study should include a minimum of 30 credit hours, including 28 credit hours of graded coursework and 2 credit hours of Master’s Report. One credit hour of ME800 Seminar/Research Paper (earned by giving a successful seminar presentation) may be included in the 28 credit hours of required coursework.

7. A student obtaining Nuclear Master Degree must take the following core courses.

• NE 620 Introduction to Nuclear Engineering Fall/Spring
• NE 612 Principles of Radiation Detection Fall
• NE 630 Nuclear Reactor Theory Fall
• NE 690 Radiation Protection and Shielding Fall
• NE 830* Nuclear Reactor Engineering Spring (course number change pending from NE 699).

Options for Completing 30 Credit Hour Requirement

In addition to the minimum graded coursework requirement (18 credit hours) and the minimum Master’s Thesis Research requirement (6 credit hours), the candidate must complete 6 more credit hours to meet the minimum credit requirement of 30 credit hours. This can be done through any combination of the following:

- Up to 2 additional credit hours of Master’s Thesis Research (ME899 or NE899)
- Up to 3 credit hours of ME 800 Seminar/Research Paper (refer to ME800 course requirements)
- Up to 3 credit hours of independent study
In addition, items (2), (3), (4), and (6) from the MS Thesis requirements above apply directly to the MS Report Option Program of Study.

The MS Report Option must culminate in a successfully defended report.

Coursework Option

The Program of Study should include a total of 30 credit hours of graded coursework.

Items (2), (4), and (6) from the MS Thesis requirements above apply directly to the MS Course Work Option Program of Study.

The MS Course Work Option must culminate in a final oral examination.

Note

Students on self-support can choose whatever option they want. Students supported by research projects or the Department should take the thesis option.

Coursework Option

Up to 6 credit hours of additional coursework

Bettis Reactor Engineer School (BRES) graduates who enter the Nuclear Master program may transfer up to 4 courses (12 credits) toward fulfillment of degree requirements. The department maintains a list of course equivalencies. Naval Nuclear Power School graduates may be awarded transfer credits for Introduction to Nuclear Engineering (NE 620). Applicants with an undergraduate degree in NE may have this requirement waived.

Report Option

The Program of Study should include a minimum of 30 credit hours, including 28 credit hours of graded coursework and 2 credit hours of Master’s Report. One credit hour of ME800 Seminar/Research Paper (earned by giving a successful seminar presentation) may be included in the 28 credit hours of required coursework.

In addition, items (2), (3), (4), and (6) from the MS Thesis requirements above apply directly to the MS Report Option Program of Study.

The MS Report Option must culminate in a successfully defended report.

Coursework Option

The Program of Study should include a total of 30 credit hours of graded coursework.

Items (2), (4), and (6) from the MS Thesis requirements above apply directly to the MS Course Work Option Program of Study.
• The MS Course Work Option must culminate in a final oral examination.

Note

Students on self-support can choose whatever option they want. Students supported by research projects or the Department should take the thesis option.

**Rationale:** The Department of Mechanical and Nuclear Engineering (MNE) at Kansas State University (KSU) has developed a Master of Science (MS) in Nuclear Engineering (NE) program specifically tailored to the needs of working Navy personnel with previous NE training. This program builds on the currently-administered undergraduate minor in NE and other distance education efforts in NE. The flexibility of this new MS-NE program also makes it well-suited for professionals in a wide variety of disciplines outside the Navy.

Dropping MATH 616, MATH 866 and MATH 867 because they are no longer offered.

**Impact:** None outside of Mechanical and Nuclear Engineering

**Effective Date:** Fall 2015