

TO: Office of Academic Program Assessment, Office of Academic Affairs June 24, 2013

FROM: Susan L. Holl, Chair

SUBJECT: MS ME 2012-2013 ANNUAL ASSESSMENT REPORT

1. As a result of last year's assessment effort, have you implemented **any changes for your assessment including learning outcomes, assessment plan, assessment tools (methods, rubrics, curriculum map, or key assignment etc.), and/or the university baccalaureate learning goals?**

- a. If so, what are those changes? How did you implement those changes?
- b. How do you know if these changes have achieved the desired results?
- c. If no, why not?

The assessment plan for the MS ME program is focused on program quality and improvement. Assessment includes program and course level outcomes and both direct and indirect measurements are used. We collect data from students, faculty, alumni, and industry constituencies.

Using the feedback from the University Office of Academic Program Review and Assessment and the GSPC Committee we have developed programmatic learning goals and objectives that are assessable, and a comprehensive programmatic assessment plan. We will ensure that we also include assessment that is appropriate at the University level. We will look at additional rubrics that have been developed (such as the VALUE rubrics) and evaluate how standard action verbs consistent with the University assessment plan can be incorporated into our programmatic assessment.

We have instituted an exit interview and developed a fuller thesis evaluation rubric. We are continuing to evaluate various rubrics to ensure that we are consistent with the University assessment.

The specific programmatic outcome selected to be evaluated during Spring 2013 was:

Demonstrate effective written and oral communication using technical standards

All MS ME students must complete a thesis and present their work. The thesis must be written using standard technical style and must be consistent with the requirements of the OGS.

The desired result is to have all students reach the "strong" level for their thesis. The thesis scoring rubric is included:

Thesis Scoring Rubric

Assessment Rubric for Thesis	Strong 2	Acceptable 1	Weak 0
EFFECTIVENESS OF THE THESIS: Papers written in an academic context are expected to contain a thoughtful and insightful thesis, main idea, position, or claim that is sustained throughout the paper.	The thesis is clear, insightful and thought-provoking. It is sustained consistently throughout the paper.	The thesis is clear and plausible. It is sustained consistently throughout the paper.	The thesis is weak or absent. It is not sustained throughout the paper.
FOCUS OF THESIS: Papers written in an academic context are expected to address the topic and issues set forth in the assignment and address all aspects of the writing task. Usually requires some discussion and refutation of an opposing view point.	The paper responds to the assignment and addresses the topic and issues. Discussion of a counterargument is included when appropriate.	The paper responds to the assignment and addresses the topic and issues. Some discussion of a counter-argument is included when appropriate.	The paper does not respond to the assignment or treats the assignment in a superficial, simplistic, or disjointed manner. Little or no discussion of a counter-argument is included.
SUPPORT: Papers written in an academic context are expected to provide support for main points with reasons, explanations, and examples that are appropriate for intended audience.	The thesis is fully and convincingly developed, supported with good reasons, explanations and examples.	The thesis is adequately developed, supported with reasons, explanations, and examples.	The thesis is inadequately developed, unsupported with reasons, explanations, and examples.
ORGANIZATION: Papers written in an academic context are expected to be well-organized, in both overall structure & paragraphs.	The paper is well-structured; its form contributes to its purpose. Paragraphs are well-organized and carefully linked to the thesis.	The paper is generally well structured, with only a few flaws in overall organization. Paragraphs are adequately organized and generally linked to the thesis.	The paper is poorly structured; organizational flaws undermine its effectiveness. Paragraphs are not well organized; nor are they linked to the thesis.
STYLE: Papers written in an academic context are expected to be stylistically effective – that is, to contain well-structured sentences, well-chosen words, and an appropriate tone, as a means of achieving its purpose.	The sentence structure, word choice, fluency, and tone of the paper enhance its effectiveness and reinforce its purpose.	The sentence structure, word choice, fluency, and tone of the paper contribute to its effectiveness and adequately support its purpose.	The sentence structure, word choice, fluency, and tone of the paper detract from its effectiveness or are inappropriate to its purpose.
GRAMMAR AND MECHANICS: Papers written in an academic context are expected to maintain sentence level correctness in terms of syntax, grammar, spelling, punctuation, and format.	The paper is correct in terms of its syntax, grammar, spelling, punctuation, and format.	Sentence level errors do not seriously detract from the paper's effectiveness.	Sentence level errors are so frequent and disruptive that they detract from the paper's effectiveness.

2. As a result of last year's assessment effort, have you implemented **any other changes at the department, the college or the university, including advising, co-curriculum, budgeting and planning?**

- a. If so, what are those changes? How did you implement those changes?
- b. How do you know if these changes have achieved the desired results?
- c. If no, why not?

Our assessment efforts indicate that all constituencies are satisfied with the quality of the program we provide, the knowledge, skills, and dispositional qualities of our graduates. The number of applicants to the MS ME program has increased significantly and we continue to have a satisfactory graduation rate.

Since Fall 2012, all graduates of the MS ME program must complete a thesis. This requirement effectively reduces the number of course work units required for the program and allows students to work closely with their advisors to ensure that they are engaging in advanced level work.

During the 2011-12 year we instituted a GWI course focused on MS ME research methodology. The students begin working on developing a relationship with an advisor and a thesis topic early in the program. Ideally they take the core GWI course, ME 209, during the first term in the program and have selected an area of interest for the thesis by the end of the first semester.

A result of the change requiring all students to complete a thesis is that we are not required to offer more courses even though we have more demand. Requiring all students to complete a thesis improves our program because each student is required to be not only proficient in course work but able to conduct an independent project and communicate the importance of the work and the significance of the results. Our graduates are required to be able to evaluate project scope and develop appropriate methods for investigation and solution of significant problems. These qualities and skills are developed when working closely with the experienced faculty – MS graduates are expected to be project leaders when they are in industry and must have the experience of independently investigating a significant problem.

An additional blended program (BS/MS in ME) has been proposed and has been approved by the ECS College curriculum committee. Approximately 10% of our BS ME graduates are interested in our MS ME program. The blended program will allow students to engage in the more advanced, independent engineering skills required for professional development as they are completing the BS ME. An outcome oriented focus emphasizing career long continuing education is a component of our ABET outcome which includes demonstrating awareness of the importance of life-long learning.

3. What **PROGRAM** (not course) learning outcome(s) have you assessed this academic year?

We assessed the following programmatic learning outcome:

Communication

4. What method(s)/measure(s) have you used to collect the data?

Student exit interviews, faculty, alumni and industry interviews and thesis evaluations (written and presentation) are used to evaluate this learning outcome.

5. What are the criteria and/or standards of performance for the program learning outcome?

The thesis scoring rubric and presentation evaluations used to evaluate this program outcome.

6. What data have you collected? What are the results and findings, including the percentage of students who meet each standard?

- a. In what areas are students doing well and achieving the expectations?
- b. In what areas do students need improvement?

We conducted exit interview with 90% of the graduates.; we conducted interviews with industry and alumni representative; and a selected group of faculty evaluated the feedback from the thesis presentations and evaluation rubrics.

100% of the graduates had an adequate thesis and presentation. 70 % are able to complete these tasks at a strong level.

We would like to increase the fraction of students who are completing their independent thesis at a strong level with a goal of 100% evaluated as strong.

7. As a result of this year's assessment effort, do you anticipate or propose any changes for your program (e.g. structures, content, or learning outcomes)?

- a. If so, what changes do you anticipate? How do you plan to implement those changes?
- b. How do you know if these changes will achieve the desired results?

We will provide the thesis evaluation rubrics to the students in the core Research Methodology course.

We will have achieved the desired result when we see all our graduates able to complete their thesis and presentation at a strong level.

8. Which program learning outcome(s) do you plan to assess next year? How?

Knowledge and Analysis: Identify and formulate technical requirements. Use mathematical and scientific tools to analyze, test, solve problems, and improve performance of designs.

We will evaluate this outcome by focusing on the written thesis and evaluations by faculty, alumni, and industry.