

Engineering Assessment Plan

Programs:

B.S. in Engineering Science

B.S. in Managerial Engineering

Mission Statement:

To produce a cross-functional, hybrid, multifunctional engineer drives the Engineering Programs. The B.S. programs in engineering are designed to produce an engineer with related information and knowledge, who will be able to effectively transfer these to industry and society without the need for extensive retraining. The program vision is to be the best engineering education program in Michigan while providing students, staff and faculty with rewarding and satisfying experiences. The mission is to provide our customers with total confidence in our educational and professional expertise and to treat everyone with fairness and dignity.

B.S. in Engineering Science: The program in Engineering Science provides the course-work and industrial experience for students wishing to enter industry as an engineer. In addition to technical content, these course provide practice in forming and working in teams, preparing and presenting oral and written technical reports, and developing advanced computer skills. Engineering design caps the program with students designing and constructing engineering projects.

Educational Outcomes:

In Engineering Criteria 2000, ABET Criteria for Accrediting Engineering Programs, Criterion 3 includes the following statement: "Engineering programs must demonstrate that their graduates have:

- (a) An ability to apply knowledge of mathematics science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs
- (d) An ability to function on multi-disciplinary teams

- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice."¹

Items (d) and (g) were chosen for initial assessment of graduates of all engineering degree programs. Specifically, the following are the goals we are now assessing:

- 1) Graduates of all engineering programs will be able to function in multi-disciplinary teams.
- 2) Graduates of all engineering programs will be able to write well-written technical engineering reports.

Assessments:

- 1) An annual survey regarding teaming will be conducted of all students enrolled in EGR 365 [A copy of the current survey is attached to this document for your evaluation.]
- 2) The final team written report in EGR 365 will be collected for faculty evaluation. [A scoring rubric is attached for your evaluation.]

Goals:

- 1) 80% or more of students in EGR 365 feel comfortable working in teams and are able to do so efficiently.

¹ 2000-2001 Criteria for Accrediting Engineering Programs-Engineering Criteria 2000, p. 32.

- 2) Each final EGR 365 report will receive a consensus score of at least 3 [Meets Expectations] in each of the four categories as ranked by engineering faculty.

Feedback:

- 1) Review of surveys in the winter term by all full-time, tenure-track engineering faculty will identify areas of concern expressed by students. Discussions will focus on these areas, and remedial action(s) will be evaluated for implementation during the subsequent academic year.
- 2) All final written report from EGR 365 will be evaluated by full-time, tenure-track engineering faculty. Discussions in the winter term will focus on common areas of concern, and remedial action(s) will be evaluated for implementation during the subsequent academic year.

Budget: None requested.

The University of Michigan-Flint
Department of Physics and Engineering Science

Date: August 28, 2000
To: EGR 365 Student
From: Dr. Mary E. Cox
Subject: Survey of Teaming

As part of an ongoing process, the faculty in the UM-Flint engineering program seek to assess the effectiveness of various components of our programs. These components are program wide and relate to the attributes of becoming an engineer. At this time we are addressing the components related to teaming, such as leading, building, and working in teams.

Please complete the following survey by September 7, 2000, and return it to Dr. Cox. You should complete this by yourself (not working in a team). The results of this survey will be used by the program faculty to improve those aspects of teaming that need work, and to leave in place those aspects that seem to be working successfully.

We thank you for your thoughtful comments and suggestions.

Engineering 365
Assessment of Teaming

Describe your first engineering team experience at UM-Flint.

Describe your most recent engineering team experience at UM-Flint.

For these descriptions consider

Was it associated with a course? If so, which one?

Were you assigned to this team or did you form it among yourselves?

What was the purpose of the team? [Homework, presentation, project, other]

How comfortable were you working in the team?

How has your definition of team work changed since your experiences?

Describe the specific engineering team skills have you mastered.

You may wish to consider such items as building a team, identifying others with complementary skills, dealing with problems within the team, setting team goals, meeting deadlines, sharing work, etc.

Describe your current comfort level in working with an engineering team.

If you have any specific suggestions or comments regarding teaming in the engineering programs at UM-F, please describe them.

Name: _____
Date: _____

EGR 365 Scoring Rubric

Student(s): _____ Term: _____

Title: _____

Instructions: Determine the level of performance by the extent to which the criterion for each item is met. All faculty doing an evaluation of a written paper will reach a consensus rating for each item.

	4(A)	3(B)	2(C)	1(D)
WRITTEN PRESENTATION EVALUATION	Exceeds Expectations	Meets Expectations	Partially meets expectations	Does not meet expectations
1. Presents ideas in a logical and organized sequence.				
2. Demonstrates a solid grasp of the topic.				
3. Provides a sense of the context of the topic.				
4. Writes clearly and correctly.				