



NORTHERN ILLINOIS UNIVERSITY

College of Engineering and Engineering Technology

Department of Mechanical Engineering

Academic Program Assessment Plan

January 16, 2013

Program: M.S in Mechanical Engineering

1. Student Learning Outcomes

Graduates of the program will attain the following outcomes:

1. Apply advanced analytical and computational techniques to engineering problems.
2. Design a system, component, or process to meet desired objectives in one of the specialty areas: applied mechanics, computer-aided design & manufacturing, thermal-fluid systems, vibrations, dynamics & control systems.
3. Identify, formulate, and solve complex engineering problems.
4. Conduct research in one of the specialty areas.
5. Communicate effectively.
6. Demonstrate professional and ethical responsibility.
7. Use modern engineering experimental and computational tools at a level appropriate for advanced analysis and design.

2. Explanation of Methods

The following chart lists the methods used, as well as a description of each method, the timeline or implementation, the person responsible, and the outcomes each method addresses.



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Method	Direct/ Indirect	Description/Target	Timeline	Person Responsible	Outcomes Addressed
Course level program assessment	Direct	<p>1. The instructors conduct assessment of course outcomes based on outcome performance matrix and using a rating score of 1-4.</p> <p>2. Homework, examinations, computer assignments and projects will be considered as course embedded measures.</p> <p>3. Instructors submit a report of the outcome performance in every semester.</p> <p>Based on the analysis of these reports, the department conducts outcome assessment in the program level.</p> <p>Target: 80% of students will attain a score of 3&4 in all outcomes.</p>	Fall and spring semester	Designated department faculty	1,2,3,7
MS Thesis/ Project	Direct	<p>Each student is required to conduct a project and write a research thesis or project report which is evaluated by an advisor and at least two more graduate faculty members.</p> <p><u>Written Report</u></p> <p>Students are required to submit the thesis /report as written documents for examination by the thesis/report committee.</p> <p><u>Oral presentation</u></p> <p>Students are also required to make an oral presentation of the thesis/report in an open seminar in front of the committee members and other students and faculty.</p> <p>Committee members assign a grade of pass or fail based on the thesis/project work.</p>	Final semester	Thesis/Project Director	1,4,5,6, 7



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		<p>Faculty determined key components of a thesis and developed rubric in an evaluation form (See Table -1) using a rating score of 1-5.</p> <p><u>Target:</u></p> <p>80% of students will attain a score of 4&5 in all outcomes.</p>			
Student Survey	Indirect	Survey form (Table-2) is developed based on program outcomes and using a rating score of 1-5.	Survey will be completed after the thesis/project defense or during an exit interview with the chair	ME coordinator /Chair	1-7
Alumni Survey	Indirect	Survey form (Table- 3) is developed based on Program outcomes	Coinciding with University wide survey administration, one, five, & 10 years after graduation	CEET/ME assessment coordinator	1-7
Employer Survey	Indirect	Survey form (Table- 5) is developed based on Program outcomes	General surveys to employer & intern participants	CEET/ME assessment coordinator	1-7



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Outcomes-by Methods – Table below demonstrates which outcomes are addressed by each method of assessment:

Student learning Outcomes	Method of Assessment
1. Apply advanced analytical and computational techniques to engineering problems.	<ul style="list-style-type: none"> • Course embedded assessment measures – homework, exams, quizzes) • Thesis/Project evaluation form • Student evaluation form • Alumni evaluation form • Employer evaluation form
2. Design a system, component, or process to meet desired objectives in one of the specialty areas: applied mechanics, computer-aided design & manufacturing, thermal-fluid systems, vibrations, dynamics & control systems.	<ul style="list-style-type: none"> • Course embedded assessment measures (homework, exams, quizzes) • Student evaluation form • Alumni evaluation form • Employer evaluation form
3. Identify, formulate, and solve complex engineering problems.	<ul style="list-style-type: none"> • Course embedded assessment measures • Student evaluation form • Alumni evaluation form • Employer evaluation form
4. Conduct research in one of the specialty areas.	<ul style="list-style-type: none"> • Thesis/Project Evaluation form • Student evaluation form • Alumni evaluation form • Employer evaluation form
5. Communicate effectively.	<ul style="list-style-type: none"> • Thesis/Project evaluation form • Student evaluation form • Alumni evaluation form • Employer evaluation form
6. Understand and practice professional and ethical responsibility.	<ul style="list-style-type: none"> • Thesis/Project evaluation form • Student evaluation form • Alumni evaluation form • Employer evaluation form
7. Use of modern engineering experimental and computational tools at a level appropriate for advanced analysis and design.	<ul style="list-style-type: none"> • Course embedded assessment measures (homework, exams, quizzes) • Thesis/Project evaluation form • Student evaluation form • Alumni evaluation form • Employer evaluation form