2012-2013 M.E. in Aerospace Engineering Academic Assessment Plan

College of Engineering
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Office of the Provost

University of Florida

Institutional Assessment

Continuous Quality Enhancement

Table of Contents

Academic Assessment Plan for M.E. in Aerospace Engineering

College of Engineering

A. Mission

The Mechanical & Aerospace Engineering department defines four objectives as the cornerstones of its mission. The first objective is naturally education. As an outstanding department in a top tier university, the department has an obligation to provide exceptional educational experiences to its students at the BS, MS, ME, and PhD levels. Along these lines we are charged with the preparation of students in the mechanical and aerospace engineering fields for future leadership in industry, academia, and government. Our second objective is to conduct state-of-the-art basic and collaborative research towards advancing science and technology in mechanical engineering and aerospace engineering. Research is the lifeblood of any influential university. Thirdly we provide service to professional societies, our local community, and the state of Florida. With partnerships come great results and we keep this in the forefront of our activities as we partner with industry to address the needs of professional societies. Finally we profess our support of the college of engineering and the university in the fulfillment of their missions.

Our vision for fulfilling our mission is composed of the following:

- Attract, develop, and retain the best faculty and staff. Employing top people in our faculty and staff positions allow us to provide the educational experiences expected of our department. Faculty are the foundation of a strong department.
- Recruit and educate the best undergraduate and graduate students. A department without students is an empty house. Students perform research which advances the department and it is the achievements of students which reflect on the department when our students find success in the world.
- Conduct internationally recognized and well-funded fundamental & applied research. By performing research which is well-funded we ensure that our efforts coincide with relevant interests in the engineering community.
- Maintain state-of-the-art teaching and research facilities. Investing in our facilities allows us to fulfill our educational and research goals.

The mission statement of the aerospace engineering program supports the college of engineering mission. Both explicitly seek to provide world-class programs in engineering education, research and service to the citizens of Florida and the nation. The mission statement for the mechanical engineering program addresses the needs of the engineering profession which is consistent with the qualities of graduates cited in the college mission statement, i.e. vision, values, leadership and professional expertise.

The mission statement of this unit supports the university's mission statement by directly addressing the areas of teaching, research and scholarship, and service. The mission of the program is critically important to the mission of the university as a land-grant, sea-grant and space-grant research university.

B. Student Learning Outcomes and Assessment Measures

SLO Type	SLO	Assessment Method	Delivery Mode
Knowledge	Ability to identify, formulate, and solve engineering problems.	Assessed with exam at start of program and comprehensive exam taken at completion of degree program.	Campus
Skills	Ability to use applied mathematical techniques. Ability to use modern engineering tools for practice at an advanced level	Assessed with exam at start of program and comprehensive exam taken at completion of degree program.	Both
Professional Behavior	No Outcome		

C. Research

The M.E. degree in the MAE department does not include a required research component. The degree is designed to provide advanced knowledge and skills for professional practice..

D. Assessment Timeline

Program: M.E. in Aerospace Engineering College of Engineering

Assessment / SLOs	Assessment 1	Assessment 2
Knowledge		
Ability to identify, formulate, and solve engineering problems.	Exam taken at start of degree program	Comprehensive Exam at completion of degree
Skills		
Ability to use applied mathematical and/or modern experimental techniques. Ability to use modern engineering tools for practice at an advanced level	Exam taken at start of degree program	Comprehensive Exam at completion of degree
Professional Behavior		
No Outocme	No Outcome	No Outcome

E. Assessment Cycle

Assessment Cycle for:
Program: M.E. in Aerospace Engineering College of Engineering

Analysis and Interpretation: May-August
Program Modifications: Completed by September 30
Dissemination: Completed by October 31

Year / SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge						
Ability to identify, formulate, and solve engineering problems. Ability to critically read and integrate engineering research literature			X	X	X	X
Skills						
Ability to use applied mathematical and/or modern experimental techniques. Ability to use modern engineering tools for practice at an advanced level			X	X	X	X

Professional Behavior						
Ability to communicate effectively			X	X	X	X

F. Measurement Tools

SLO 1:

Knowledge

Ability to identify, formulate and solve engineering problems

Ability to critically read and integrate engineering research literature

Assessment Plan

The SLO is assessed at two points during the degree. The first assessment utilizes an exam taken at the start of the program which is taken by all students in the program. The exam is designed to test at the advanced undergraduate level and introductory graduate level to give an indication of student level of achievement at the start of the degree program. The second assessment utilizes the comprehensive exam taken at the end of the program to give an indication of achievement by the end of the degree program. The comprehensive exam is designed to test at the intermediate graduate level of performance. In each of the four programs (Mechanical MS, Mechanical ME, Aero MS, and Aero ME) the students in their last semester take a comprehensive multiple choice exam covering three areas selected from a list of 15 different subjects. Questions are selected by random draw from a pool of 147 questions. (This pool will be enlarged over time). 13 of the questions test Mechanical Outcome 1, 14 test Mechanical Outcome 2, 13 test Aerospace Outcome 1, and 13 test Aerospace Outcome 2. Students are allowed to take the exam as many times as they wish and a passing score is 75% correct with no punitive scoring for wrong answers.

Rubric

Based on student performance the committee will assign a score based on the rating scale: 1 (poor), 2 (fair), 3 (good), 4 (very good) and 5 (excellent).

Program Metric

100% of students in the class should exhibit 3 or above

Example Result

Data will be first collected during the 2012/13 academic year. Example results are not yet available.

SLO 2:

Skills

Ability to use applied mathematical and/or modern experimental techniques
Ability to use modern engineering tools for practice at an advance level

Assessment Plan
The SLO is assessed at two points during the degree. The first assessment utilizes an exam taken at the start of the program which is taken by all students in the program. The exam is designed to test at the advanced undergraduate level and introductory graduate level to give an indication of student level of achievement at the start of the degree program. The second assessment utilizes the comprehensive exam taken at the end of the program to give an indication of achievement by the end of the degree program. The comprehensive exam is designed to test at the intermediate graduate level of performance. In each of the four programs (Mechanical MS, Mechanical ME, Aero MS, and Aero ME) the students in their last semester take a comprehensive multiple choice exam covering three areas selected from a list of 15 different subjects. Questions are selected by random draw from a pool of 147 questions. (This pool will be enlarged over time). 13 of the questions test Mechanical Outcome 1, 14 test Mechanical Outcome 2, 13 test Aerospace Outcome 1, and 13 test Aerospace Outcome 2. Students are allowed to take the exam as many times as they wish and a passing score is 75% correct with no punitive scoring for wrong answers.

Rubric
Based on student performance the committee will assign a score based on the rating scale: 1 (poor), 2 (fair), 3(good), 4(very good) and 5 (excellent).

Program Metric
100% of students in the class should exhibit 3 or above

G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Bruce Carroll	MAE	bfc@ufl.edu	352-262-8174
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Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at http://www.aa.assessment.edu

Program: Year:

Component	Criterion	Rating			Comments
		Met	**Partially Met**	**Not Met**	
Mission Statement	Mission statement is articulated clearly.				
	The program mission clearly supports the College and University missions, and includes specific statements describing how it supports these missions.				
Student Learning Outcomes (SLOs) and Assessment Measures	SLOs are stated clearly.				
	SLOs focus on demonstration of student learning.				
	SLOs are measurable.				
	Measurements are appropriate for the SLO.				
Research	Research expectations for the program are clear, concise, and appropriate for the discipline.				
Assessment Map	The Assessment Map indicates the times in the program where the SLOs are assessed and measured.				
	The Assessment Map identifies the assessments used for each SLO.				
Assessment Cycle	The assessment cycle is clear.				
	All student learning outcomes are measured.				
	Data is collected at least once in the cycle.				
	The cycle includes a date or time period for data analysis and interpretation.				
	The cycle includes a date for planning improvement actions based on the data analysis.				
	The cycle includes a date for dissemination of results to the appropriate stakeholders.				

University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Measurement Tools	Measurement tools are described clearly and concisely.				
	Measurements are appropriate for the SLOs.				
	Methods and procedures reflect an appropriate balance of direct and indirect methods.				
	The report presents examples of at least one measurement tool.				
Assessment Oversight	Appropriate personnel (coordinator, committee, etc.) charged with assessment responsibilities are identified				