Academic Assessment Plan

University of Florida

Academic Affairs

Academic Colleges

College of Engineering

Mechanical & Aerospace Engineering

####### Mechanical Engineering (BSME)

BSME Mechanical Engineering Mission

The mission statement as published in the 2013-14 Undergraduate Catalog:

> *The mission of the undergraduate program is to serve the state of Florida, the United States and the engineering profession by providing quality educational programs in mechanical engineering; conduct a nationally recognized research program; and foster ongoing professional development of students and faculty.*

The mission statement of the mechanical 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.

Responsible Roles: Associate Professor (Carroll, Bruce)
Program: Mechanical Engineering (BSME)
Progress:

PG 1: Prepare graduates to meet the expectations of employers of mechanical engineers

Prepare students for employment in the mechanical engineering and related sectors.

Evaluation Method

Placement data is obtained from the Career Resource Center and exit interviews. The information

includes percentage of students who have accepted job offers (and name of employer), currently seeking employment, or pursuing other activities.

Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

PG 2: Prepare graduates to pursue advanced study
Qualified graduates will pursue advanced study if they so desire.

Evaluation Method
The primary instrument used to assess this program goal is exit interviews with graduating seniors.

Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

PG 3: Assist students in timely completion of the undergraduate degree
Improve graduation rates for students in the undergraduate program.

Evaluation Method
Graduation data is obtained from student academic records. For purposes of this program goal, graduation rate is defined in a manner consistent with FAFSA, i.e. the percentage of the first-time, first-year undergraduate students who complete their program within 150% of the published time for the program (i.e. within 6 years). Graduation rates within 4 and 5 year time frames is also tracked.

Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

PG 4: Increase diversity of undergraduate student population
Increase the percentage of students in the program from historically underrepresented groups.

Evaluation Method
Data related to gender, race and ethnicity is obtained from enrollment data and student academic records for students in the program. The percentage of students in each category is tracked over time.

Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

SLO 1: Content Knowledge
Apply knowledge of mathematics, science and engineering principles to mechanical engineering problems.

SLO Area (select one): Content (UG)
Responsible Role: Associate Professor (Carroll, Bruce)

Progress:

Assessment Method
Direct assessment using embedded question on exam

Performance evaluated using faculty established rubric

SLO 2: Content Knowledge
Design and conduct mechanical engineering experiments and analyze and interpret the data.

SLO Area (select one): Content (UG)
Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

Assessment Method
Direct assessment using embedded questions on exam

Performance evaluated using faculty established rubric

SLO 3: Critical Thinking
Design a mechanical engineering system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints.

SLO Area (select one): Critical Thinking (UG)
Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

Assessment Method
Direct assessment using written design report

Performance evaluated using faculty established rubric

SLO 4: Communication
Communicate technical data and design information effectively in speech and in writing to other mechanical engineers.

SLO Area (select one): Communication (UG)
Responsible Role: Associate Professor (Carroll, Bruce)
Progress:

Assessment Method
Direct assessment using written reports and oral presentations

Performance evaluated using faculty established rubric

BSME Mechanical Engineering Detail
Start: 7/1/2017
End: 6/30/2018
Progress:
Providing Department: Mechanical Engineering (BSME)
Responsible Roles: Associate Professor (Carroll, Bruce)

Research (Graduate and Professional AAPs only)

Assessment Timeline (Graduate and Professional AAPs only)

Curriculum Map (UG AAPs only)
Key: **I**ntroduced **R**einforced **A**ssessed

Courses / SLOs	EGM2511	EGM 3344	EGM 3401	EGM 3520	EGM 4313	EGN 3353C	EML2920
Content Knowledge							
#1	I	R	R	A Embedded Question	R	R	
#2							
Critical Thinking							
#3	I			R			
Communication							
#4							I

SLO #1: Apply knowledge of mathematics, science and engineering principles to mechanical e

SLO #2: Design and conduct mechanical engineering experiments and analyze and interpret t

SLO #3: Design a mechanical engineering system, component or process to meet desired need
economic, environmental, social, political, ethical, health and safety, manufacturability and su

constraints.

SLO #4: Communicate technical data and design information effectively in speech and in writi
mechanical engineers.

Assessment Cycle (All AAPs)
The SLO are assessed on a two year rotation in the spring semester of each year with SLO1 and
assessed in odd years and SLO2 and SLO4 being assessed in even years (ex. Spring 2012 is an
SLO2 and SLO4 are assessed, Spring 2013 is an odd year in which SLO1 and SLO3 are assessed
data from the courses indicated in Figure 1 is supplemented by various forms of indirect assess
anecdotal feedback from faculty, graduating student exit interviews, feedback from employers,
Results of the assessments are evaluated by faculty outcome committees developed for each SI
results from the faculty outcome committees are then presented to the entire departmental fac
results are discussed by the general faculty at the annual faculty planning meeting held in Aug
Various faculty working groups including the departmental curriculum committee, course com
working groups incorporate the feedback into improvements to the program. Results of the ass
communicated to the departmental faculty and the departmental external advisor board at lea
spring external advisory board meeting held in April of each year.

Analysis and Interpretation: August
Improvement Actions: Completed by March
Dissemination: Completed by April

Year SLOs	17-18	18-19	19-20	20-21	21-22	22-23
Content Knowledge						
#1		x		x		x
#2	x		x		x	
Critical Thinking						
#3		x		x		x
Communication						
#4	x		x		x	

Methods and Procedures (UG and Certificate AAPs)

SLO Assessment Matrix		
Student Learning Outcome	**Assessment Method**	**Measure**
SLO 1: Apply knowledge of mathematics, science and engineering principles to aerospace engineering problems.	Direct assessment using embedded question on exam	Performance faculty estab
1. **SLO 2:** Design and conduct aerospace engineering experiments and analyze and interpret the data.	Direct assessment using embedded questions on exam	Performance faculty estab
SLO 3: Design an aerospace engineering system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints	Direct assessment using written design report	Performance faculty estab
SLO 4: Communicate technical data and design information effectively in speech and in writing to other aerospace engineers.	Direct assessment using written reports and oral presentations	Performance faculty estab

Direct assessment measures are used for all SLOs as indicated in the SLO Assessment Matrix. assessment measures utilized include embedded questions on exams, grades on written assign or grades on oral presentations. Sub grades on written assignments and reports are utilized wh that the reported direct assessment measure is related solely to the specified SLO. For example of figures and graphs on a report (related to written communication on SLO#4) is segregated f technical content.

Additional indirect assessment measures are used to gather input on student achievement of t students are asked to self report on their level of achievement of the SLOs in a required exit int periodically contacted (3, 5 and 7 years after graduation) and asked to complete a survey. As a survey, they are asked to rate the level of preparation they received relative to each SLO. Aneco collected from instructors in courses about the level of student performance.

An example of an assessment tool is included in Figure 1. The tool makes use of an excel sprea collection and transmittal of the results to faculty outcome committees for evaluation and reco continuous improvement actions.

SLO Assessment Rubric (All AAPs)

Measurement Tools (Graduate and Professional AAPs Only)

Assessment Oversight (All AAPs)

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Academic Assessment Plan Entry Complete: ☑