

**M.E. in Environmental
Engineering Sciences
Academic Assessment Plan
2012-2013**

College of Engineering
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Office of the Provost

*University of
Florida*

*Institutional
Assessment*

*Continuous Quality
Enhancement*

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Academic Assessment Plan for M.E. in Environmental Engineering Sciences

College of Engineering

A. Mission

The mission of EES is to provide quality undergraduate and graduate educational programs in environmental engineering sciences, to conduct an internationally recognized environmental research program that will substantially contribute to the benefit of the earth, and to provide authoritative guidance to individuals and organizations charged with preventing and solving local, state, national and global environmental problems. EES serves as a leader in multi-department programs aimed at solving environmental problems and as a major on-campus crucible for conceptualization and solution of environmental problems.

The EES mission statement aligns with the College of Engineering mission statement:

The College of Engineering fosters and provides world-class programs in engineering education, research and service to enhance the economic and social well-being of the citizens of Florida, the nation and the world.

The EES mission statement aligns with the University of Florida mission statement, a portion of which is provided below:

The university welcomes the full exploration of its intellectual boundaries and supports its faculty and students in the creation of new knowledge and the pursuit of new ideas.

- *Teaching is a fundamental purpose of this university at both the undergraduate and graduate levels.*
- *Research and scholarship are integral to the educational process and to the expansion of our understanding of the natural world, the intellect and the senses.*
- *Service reflects the university's obligation to share the benefits of its research and knowledge for the public good. The university serves the nation's and the state's critical needs by contributing to a well-qualified and broadly diverse citizenry, leadership and workforce.*

B. Student Learning Outcomes and Assessment Measures

SLO Type	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	For M.E. with thesis--Knowledge an ability to identify, formulate, and solve environmental problems using scientific and engineering methods and tools	For M.E. with thesis-- Evaluated in the thesis and the final oral defense by the supervisory committee. Rubric: Clear demonstration that this SLO is achieved in statement of the hypotheses, performance of research, and conclusions drawn. Metric: Unanimous decision of passing grade for thesis and exam by the supervisory committee. For M.E. non-	Both

		thesis -- Evaluated in the final exam administered by the supervisory committee chair. Rubric: Test questions that are specific to the student's focus area. Metric: Passing grade	
Skills	Skills <ul style="list-style-type: none"> o an ability to critically read and evaluate engineering or science literature o an ability to use the techniques, methods, and appropriate professional tools necessary for professional practice at an advanced level o an ability to communicate effectively. 	For M.E. with thesis -- Evaluated in the thesis and the final oral defense by the supervisory committee Rubric: Clear demonstration that this SLO is achieved in literature review, methods, presentation of results and conclusions drawn. One journal article submitted to a refereed journal. Metric: Unanimous decision of passing grade for thesis and exam by the supervisory committee For M.E. non-thesis -- Evaluated in the final exam administered by the supervisory committee chair. Rubric: Test questions that are specific to the student's focus area. Metric: Passing grade.	Both
Professional Behavior	Professional Behavior: an understanding of professional and ethical responsibility	for M.E. with thesis -- Evaluated in the thesis and the final oral defense by the supervisory committee Rubric: Clear demonstration that this SLO is achieved in the ethical and professional completion of the dissertation specifically avoiding plagiarism and demonstrating honesty in performance and documentation of the research. Metric: Unanimous decision of passing grade for thesis and exam by the supervisory committee. For M.E. non-thesis -- Evaluated in the final exam administered by the supervisory committee chair Rubric: Test questions that pertain to professional and ethical responsibility Metric: Passing grade	Both

C. Research

The Environmental Engineering Sciences Master's program consists of two types of degrees: a thesis degree and a non-thesis coursework only degree. There is no research required for the 30-hour coursework only degree. The thesis degree requires the successful completion of research, the completion of a Master's thesis and the successful defense of that thesis before a supervisory committee of at least two and often three graduate faculty members. The EES faculty expect that Master's thesis research be of high quality and accordingly expect that the research will lead to at least one paper that will be submitted to and accepted by a refereed technical journal in the field of study. Early in the student's program and after the research topic has been chosen, the supervisory committee chair and the supervisory committee members identify courses that would be support the student's research. In addition six credits of research, ENV6971, can be used by the student to satisfy the 30-credit degree requirement. The department also offers a weekly seminar in both fall and spring semesters that are devoted to graduate research topics. In these seminars students can become familiar with research in the department and related areas. Students are encouraged to present their research at national and state conferences as well as on campus venues. The EES department hosts an annual poster competition for EES students and other students from other academic units on campus.

Research can be based on laboratory, field, or computer studies. Safety in completion of all research is emphasized and all graduate students involved in laboratory and/or field studies are required to complete safety training on an annual basis.

D. Assessment Timeline

Use this Assessment Timeline template for your plan. Add or delete rows and columns to accommodate your SLOs and assessments.

Program M.E. in Environmental Engineering College of Engineering

Assessment SLOs	Assessment 1 Thesis	Assessment 2 Thesis	Assessment1 non-thesis cousework only
Knowledge			
Identify, formulate and solve environmental problems	Master's thesis	Master's thesis defense	Final exam
Skills			
critically read and evaluate literature	Master's thesis	Master's thesis defense	Final exam
use appropriate professional tools	Master's thesis	Master's thesis defense	Final exam
communicate effectively	Master's thesis	Master's thesis defense	Final exam
Professional Behavior			
professional & ethical responsibility	Master's thesis	Master's thesis defense	Final exam

E. Assessment Cycle

Use this Assessment Cycle template for your plan. Add or delete rows as needed to accommodate your SLOs.

Assessment Cycle for:

Program M.E. in Environmental Engineering College of Engineering

Analysis and Interpretation: May - June

Program Modifications: Completed by September 15

Dissemination: Completed by October 15

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge							
Identify, formulate and solve environmental problems				x	x	x	x
Skills							
critically read and evaluate literature				x	x	x	x
use appropriate professional tools				x	x	x	x
communicate effectively				x	x	x	x
Professional Behavior							
professional & ethical responsibility				x	x	x	x

F. Measurement Tools

For the Master's thesis degree, the supervisory committee of at least two graduate faculty members evaluates the thesis and the thesis defense. The committee either passes or fails the student, but also provides an evaluation of the student on a scale of 1 to 5 as to how well the student satisfied each of the student learning outcomes (see example below). For non-thesis students, the supervisory committee chair evaluates the performance on the final exam on a scale of 1 to 5 as to how well the student satisfied each of the student learning outcomes.

1	2	3	4	5
Thesis is insufficient – inferences are not defensible	Thesis marginally meets expectations	Thesis meets expectations	Thesis meets expectations – one or more conference presentations expected	Thesis exceeds expectations – journal paper has been accepted.

G. Assessment Oversight

Oversight of the assessment process is the primary responsibility of the Department Head with the cooperation of the Environmental Engineering Sciences ABET Committee. The Environmental Engineering Sciences Department resides within the Engineering School of Sustainable Infrastructure and Environment (ESSIE) which is led by a Director who is also in charge of the Department of Civil and Coastal Engineering. The contact information for the Department Head of Environmental Engineering Sciences and the Director of ESSIE are provided below:

Department Head: Dr. Paul A. Chadik, P.E.
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Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at <http://www.ua.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				