

M.S. in Civil Engineering Academic Assessment Plan

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.S. in Civil Engineering

College of Engineering

A. Mission

The Department of Civil and Coastal Engineering Mission Statement is as follows:

The mission of the Department of Civil and Coastal Engineering is to deliver undergraduate and graduate degree programs that prepare Civil and Coastal engineers for successful careers in an increasingly global and interdisciplinary world, and to perform research that results in leading scientific contributions that have a direct impact on our ability to renew, secure, and broaden the capabilities of our nation's infrastructure, environment and homeland security.

Furthermore, the objectives of the graduate programs in Civil and Coastal Engineering are to educate individuals who:

- Assume and/or advance to leadership roles in industry, government, and academia;
- Demonstrate in-depth knowledge and a high level of competence in a specialty area within Civil and Coastal Engineering;
- Serve their profession and communities through the dissemination of advanced knowledge in peer-reviewed journal articles, textbooks, patents, presentations at technical conferences, and service on technical committees; and,
- Become the educators of future generations of Civil and Coastal Engineers.

As a service-oriented profession, the Civil Engineering mission statement above is completely consistent with the core elements of the University of Florida Mission Statement, namely, Teaching, Research and Service as shown below:

- *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.*

The program mission is also aligned with the mission statement of the College of Engineering in the same three major areas:

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.

Graduates of the College of Engineering at the University of Florida will exhibit the following in pursuit of their profession:

- *Vision, as evidenced by an ability to use creative approaches to problems.*
- *Values, as evidenced by an understanding of the importance of employing strong professional ethics.*
- *Leadership, as evidenced by serving as a team/project leader with solid project management and planning skills, a mentor to less experienced staff, and a volunteer in the community*
- *Professional expertise, as evidenced by making meaningful contributions to technical engineering problem solving as both an individual contributor and in team situations, continually enhancing both technical and non-technical skills, applying professional expertise to increasingly complex problems/projects, and increasingly capable communications skills, both verbal and written*
- *Knowledge about the interaction of financial, societal, legal or cultural influences with science and technology*

B. Student Learning Outcomes and Assessment Measures

Student Learning Outcome	SLO Type	Assessment Measure
1. An ability to identify, formulate and solve engineering problems in the student's program area. (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation).	Content Knowledge	Master's comprehensive final examination or thesis defense as appropriate.
2. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the student's program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation).	Skills	Master's comprehensive final examination or thesis defense as appropriate.
3. Effectively communicate technical knowledge and information.	Professional Communication	Master's comprehensive final examination or thesis defense as appropriate.

C. Research

The Civil Engineering graduate program conducts cutting-edge research in the following key areas: 1) Transportation Infrastructure Systems (including traffic operations, traffic simulation and congestion mitigation); 2) Structures (including extreme-event loading, civil infrastructure and infrastructure health monitoring); 3) Civil Engineering Materials (including high-performance pavement materials and visco-elastoplastic materials); 4) Geotechnical Engineering (including statistical site characterization, pressure grouting and deep pile foundations); 5) Water Resources Engineering (including water resource monitoring/assessment and aquifer remediation); and 6) Construction (including infrastructure renewal and disaster management and response).

The research expectation for M.S. students in the Civil Engineering program is commensurate with the level of departmental support provided. Those students supported by the department via Teaching Assistant or Research Assistant positions are expected to prepare a Master's thesis which represents a significant, independent contribution to one or more of the research areas enumerated above. Self-supported students participating in the coursework-only Master's program are not required to complete a Master's thesis or participate in research. Some self-supported students do elect to complete a Master's thesis and many others contribute to the departmental research mission via independent study projects.

D. Assessment Timeline

M.S. in Civil Engineering _____

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Assessment	Assessment 1
SLOs	
Knowledge	
SLO #1: An ability to identify, formulate, and solve engineering problems	Master's comprehensive final examination or thesis defense as appropriate.
Skills	
SLO #2: An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level	Master's comprehensive final examination or thesis defense as appropriate.
Professional Behavior	
SLO #3: Effectively communicate technical knowledge and information.	Master's comprehensive final examination or thesis defense as appropriate.

E. Assessment Cycle

Assessment Cycle for:

M.S. in Civil Engineering

College of Engineering

Analysis and Interpretation:

May-June

Program Modifications:

Completed by Oct. 1

Dissemination:

Completed by Dec. 1

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge							
SLO #1: An ability to identify, formulate, and solve engineering problems				X	X	X	X
Skills							
SLO #2: An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level				X	X	X	X
Professional Behavior							
SLO #3: Effectively communicate technical knowledge and information				X	X	X	X

Note: Data collection for these assessments will begin in the 2012-13 academic year. Assessment data were not collected in prior years via the Master's comprehensive examination but via grades obtained in key required courses.

F. Measurement Tools

The primary tool for the measurement of the achievement of the SLOs is the comprehensive final examination for the M.S. degree (or M.S. thesis defense examination where appropriate). A faculty supervisory committee conducts the examination in the final semester of the student's term to degree (note that in some instances in the case of a coursework-only Master's degree, the student may only spend two semesters in the degree program). Separate assessments are made for each of the three specified student learning outcomes and the committee evaluates the student's performance according and completes the SLO assessment form according to the rubric provided (an example assessment form is provided in Appendix A).

G. Assessment Oversight

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Appendix A: Master's Final Comprehensive Examination/Thesis Defense Evaluation Rubric for Graduate SLO Assessment

Department of Civil and Coastal Engineering
Graduate Student Learning Outcomes

Outcomes Assessment Form: Masters Students in Civil Engineering

Assessment Mechanism: Masters Final Examination / Masters Thesis Defense

Semester: _____

Degree Program: _____ M.S. Specialty Area _____
(Check one)

_____ M. Eng. Specialty Area _____

Graduate Student Learning Outcomes to be Assessed:

Knowledge: An ability **to identify, formulate, and solve engineering problems** in the Civil Engineering specialty area.

Skills: An ability **to use** the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the Civil Engineering specialty area.

Professional Communication: Effectively **communicate technical knowledge and information**.

Assessment Rubric: Likert scale 1 to 5 according to:
5 Outstanding achievement of outcome
4 Good achievement of outcome
3 Adequate achievement of outcome
2 Inadequate achievement of outcome
1 Failure to achieve outcome

Outcome Scores:

Committee Member	Knowledge	Skills	Professional Communication
Total Score			

