

# **Ph.D. in Civil Engineering Academic Assessment Plan**

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*Office of the Provost*

*University of  
Florida*

*Institutional  
Assessment*

*Continuous Quality  
Enhancement*

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# Academic Assessment Plan for Ph.D. 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 and Coastal 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 critically read engineering literature in the student's graduate program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation); and an ability to identify, formulate new solutions to engineering problems in the student's program area.	Content Knowledge	Ph.D. dissertation defense

2. An ability to develop new techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the students program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation).	Skills	Ph.D. dissertation defense
3. Effectively communicate technical knowledge and information.	Professional Communication	Ph.D. dissertation defense

### 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).

It is expected that Ph.D. students in the Civil Engineering program will make important cutting-edge contributions at the forefront of national research and that, as part of the progress toward completion of their doctoral dissertation, they will present the results of their research at national and international conferences and publish their findings in high-quality refereed archival journals. Accordingly almost all Ph.D. students in the program are supported by on fellowships or research assistantships. Doctoral students must complete three intermediate milestone assessments prior to the completion of the final assessment at the dissertation defense and in addition to all coursework requirements, namely: 1) A preliminary examination at the end of the first year in the Ph.D. program; 2) A written and oral qualifying examination in order to advance to Ph.D. candidacy; and 3) A Ph.D. research proposal, presented to the supervisory committee within 6 months of completion of the qualifying examination process.

## D. Assessment Timeline

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Assessment	Assessment 1
<b>SLOs</b>	
<b>Knowledge</b>	
SLO #1: An ability to critically read engineering literature and an ability to identify, formulate new solutions to engineering problems	Ph.D. dissertation defense
<b>Skills</b>	
SLO #2: . An ability to develop new techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level	Ph.D. dissertation defense
<b>Professional Behavior</b>	
SLO #3: Effectively communicate technical knowledge and information.	Ph.D. dissertation defense

## E. Assessment Cycle

Assessment Cycle for:

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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
<b>Content Knowledge</b>							
SLO #1: An ability to critically read engineering literature and an ability to identify, formulate new solutions to engineering problems			X	X	X	X	X
<b>Skills</b>							
SLO #2: . An ability to develop new techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level			X	X	X	X	X
<b>Professional Behavior</b>							
SLO #3: Effectively communicate technical knowledge and information			X	X	X	X	X

## **F. Measurement Tools**

The primary tool for the measurement of the achievement of the SLOs is the doctoral dissertation defense. The doctoral candidate's supervisory committee conducts separate assessments for each of the three specified student learning outcomes and the committee evaluates the student's performance accordingly and completes the SLO assessment form according to the rubric provided (an example Ph.D. dissertation assessment form is provided in Appendix A). These assessments are completed in addition to the conventional dissertation defense forms required by the graduate school.

## **G. Assessment Oversight**

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## Appendix A: Doctoral Dissertation Defense Evaluation Rubric for Graduate SLO Assessment

Department of Civil and Coastal Engineering  
Graduate Student Learning Outcomes

Outcomes Assessment Form: Ph.D. Students

Assessment Mechanism: Ph.D. Dissertation Defense

Semester: \_\_\_\_\_

Degree Program: \_\_\_\_\_ Ph.D. Civil Engineering    Area of Specialization: \_\_\_\_\_  
(Check one)  
\_\_\_\_\_ Ph.D. Coastal and Oceanographic Engineering

### Graduate Student Learning Outcomes to be Assessed:

Knowledge: An ability to **critically read** engineering literature in the student's graduate program area, and an ability to **identify and formulate new solutions** to engineering problems in the student's program area.

Skills: An ability to **develop new** techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the students program area.

Professional Communication: An ability to present technical work through both **written** and **oral** methods.

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
	Critically Read Literature	Develop New Techniques		
<b>Total Score</b>				



