

# **Ph.D. Program in Computer Engineering Academic Assessment Plan 2012-13**

**Department of Computer and Information Science and  
Engineering,  
College of Engineering**

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*Office of the Provost*

*University of  
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*Institutional  
Assessment*

*Continuous Quality  
Enhancement*

## Table of Contents

2012-13 Academic Assessment Plan Ph.D. Program in Computer Engineering .....	3
A. Mission .....	3
B. Student Learning Outcomes and Assessment Measures .....	5
C. Research.....	6
D. Assessment Timeline.....	6
E. Assessment Cycle .....	7
F. Measurement Tools.....	7
G. Assessment Oversight .....	7
Figure 1: Ph.D. SLO Assessment Rubrics for Knowledge, Skill and Communication at Ph.D. ....	8
Figure 2: Sample Online Quiz Question:.....	9

# **2012-13 Academic Assessment Plan Ph.D. Program in Computer Engineering Computer and Information Science and Engineering Department**

## **College of Engineering**

### **A. Mission**

#### **A.1. CISE Mission:**

The Department of Computer and Information Science and Engineering is concerned with the theory, design, development and application of computer systems and information processing techniques. The mission of the CISE Department is to educate undergraduate and graduate majors as well as the broader campus community in the fundamental concepts of the computing discipline, to create and disseminate computing knowledge and technology, and to use our expertise in computing to help society solve problems.

#### **A.2. College of Engineering Mission**

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.

#### **A.3. University of Florida Mission**

The University of Florida faculty renews its commitment to serve the citizens of Florida and educate students so they are prepared to make significant contributions within an increasingly global community. In affirming the university's academic mission, we honor the human component of our mission: our students, faculty, staff and administrators; and recognize the importance of these human resources to the university's success. Towards this affirmation, the University of Florida faculty specifically encourages a campus-wide culture of caring.

It is the mission of the University of Florida to offer broad-based, exclusive public education, leading-edge research and service to the citizens of Florida, the nation and the world. The fusion of these three endeavors stimulates a remarkable intellectual vitality and generates a synthesis that promises to be the university's greatest strength.

The university maintains its dedication to excellent teaching and researching by creating a strong and flexible foundation for higher education in the 21st century. While the faculty remains committed to key aspects of the university's original mission, changing times will require that we continually expand and evaluate our academic aspiration. We do this in order to assure that quality education at the University of Florida remains the highest goal and most valued contribution to society.

The University of Florida belongs to a tradition of great universities. The faculty and staff of the university are dedicated to the common pursuit of its mission of education, research and service. Together with our undergraduate and graduate students we participate in an educational process that links the history of Western Europe with the traditions and cultures of all societies, that explores the physical and biological universes, and that nurtures generations of young people from diverse backgrounds to address the needs of our societies. The university welcomes the full exploration of our intellectual boundaries and supports our 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 education 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.

These three interlocking elements span all of the university's academic disciplines and represent the university's commitment to lead and serve the State of Florida, the nation, and the world by pursuing and disseminating new knowledge while building upon the experiences of the past. The University of Florida aspires to advance the state, nation and the international community by strengthening the human condition and improving the quality of life.

#### A.4. Mission Alignment:

The program mission clearly aligns with the college and the university missions. The program addresses the concerns with the theory, design, development, and application of computer and information systems. Its mission emphasizes research, education, services, and contribution to the society.

## B. Student Learning Outcomes and Assessment Measures

Student Learning Outcomes	Assessment Method	Results	Criterion for Success
1. Knowledge: an ability to identify, formulate, and solve computer science and engineering problems	Ph.D. final thesis defense	Target: use computer science and engineering skill to produce at least one original research paper accepted for publication by a peer review process. Assessments begin Fall 2011	Assessment of Student Learning Outcomes of Knowledge, Skill and Professional Experience
2. Knowledge: an ability to critically read computer science and engineering literature	Ph.D. dissertation.	Target: student must survey and demonstrate understanding of relevant past and current research results from the open literature commensurate with supervisory committee expectations. Assessments begin Fall 2011	Assessment of Student Learning Outcomes of Knowledge, Skill and Professional Experience
3. Skills: an ability to use the techniques, skills, and tools necessary for computer science and engineering practice at an advanced level	Ph.D. final thesis defense	Make innovative use of computer science and engineering skills in the conduct of research commensurate with supervisory committee expectations. Assessments begin Fall 2011	Assessment of Student Learning Outcomes of Knowledge, Skill and Professional Experience
4. Professional experience: an understanding of professional and ethical responsibility	Students must take an exam with questions on ethics.	Students must answer 90% of the questions correctly before graduation. Assessments begin Fall 2011	Assessment of Student Learning Outcomes of Knowledge, Skill and Professional Experience
5. Professional experience: an ability to communicate effectively	Exit interview	Students must effectively answer all exit interview questions. Assessments begin Fall 2011	Assessment of Student Learning Outcomes of Knowledge, Skill and Professional Experience

## C. Research

The department offers six research areas:

1. Computer graphics, modeling and art
2. Computer systems
3. Computer vision and intelligent systems
4. Database and information systems
5. High-performance computing and algorithms
6. Networks and security

The CISE department at the University of Florida provides many opportunities for research at all levels. All of our Ph.D. students are expected to perform original, publishable research in the Computer and Information Science and Engineering fields. Our Ph.D. students will usually publish in high quality IEEE or ACM journals and conferences. Many of our Ph.D. students learn to do research by collaborating with their advisors and by working as Graduate Research Assistants. M.S. students may perform research. There is an M. S. thesis option but the thesis is not required. Less than half of the students take the thesis option. It is often the case, although not always, that the research performed to complete the thesis option results in publishable research. Undergraduate students also get involved in research activities in multiple ways.

Students are sometimes involved in National Science Foundation Research through the Research Experience for Undergraduates program that provides additional funding to NSF grantees to fund undergraduate research. Some of our students perform research in collaboration with companies via our Integrated Product Process and Design (IPPD) program. In addition, all of our undergraduate must conduct a senior project, some of which are research projects undertaken with individual faculty members.

## D. Assessment Timeline

Program: Ph.D. in Computer Engineering

College: College of Engineering

Assessment	Assessment 1	Assessment 2
<b>SLOs</b>		
<b>Knowledge</b>		
#1	Final thesis exam	
#2	Final thesis exam	
<b>Skills</b>		
#3	Final thesis exam	
<b>Professional Behavior</b>		
#4		On-line ethics tutorial & quiz
#5	Final thesis exam	

## E. Assessment Cycle

Assessment Cycle for:

Program: Ph.D. in Computer Engineering College: College of Engineering

Analysis and Interpretation:

Fall Term every other year

Program Modifications:

Completed by the following Spring term

Dissemination:

Completed by the End of following Spring Term

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
<b>Content Knowledge</b>							
#1			Fall 11, Spring12, Summer12	Fall 12	Fall 13	Fall 14	Fall 15
#2			Fall 11, Spring12, Summer12	Fall 12	Fall 13	Fall 14	Fall 15
<b>Skills</b>							
#3			Fall 11, Spring12, Summer12	Fall 12		Fall 14	
<b>Professional Behavior</b>							
#4			Fall 11, Spring12, Summer12	Fall 12		Fall 14	
#5			Fall 11, Spring12, Summer12	Fall 12		Fall 14	

## F. Measurement Tools

**Knowledge and Skill:** We distribute an evaluation form with score sheet to the supervisory committee chair of all Ph.D. students when they take the final thesis exam. The chair and committee members make a thorough evaluation based on student's performance and presentation.

**Professional Behavior:** The department establish online ethics tutorial and quiz for all graduate students. All students must take the tutorial and quiz before graduation. Students who do not reach to the minimum requirement (answer 90% of the questions correctly), are allowed to retake the test again until they reach the goal.

## G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Paul Gader	CISE	pgader@cise.ufl.edu	352-392-1527
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## Figure 1: Ph.D. SLO Assessment Rubrics for Knowledge, Skill and Communication at Ph.D. Exam and Rubric for Assessment of Professional Behavior

The Ph.D. student performance is assessed at the CISE Ph.D. Final Exam. Student's Ph.D. supervisory committee chair and members circle the appropriate numbers to indicate levels of performance based on comparisons with other students of comparable academic level. A minimum score of 3 is required for all four outcomes in order for the student to pass the final exam. In addition, we establish on-line tutorial and quizzes for assessing professional behavior.

	1 = poor	2 = fair	3 = good	4 = very good	5 = excellent
1. Ability to identify, formulate, and solve computer science and engineering problems.	No research theme, problem statement, and formulation. Unclear on solution to the problem.	Describe but unclear on thesis theme and problem solving method.	Provide general description and formulation on the problems with reasonably clear solution method.	Clearly identify, formulate and solve the problem on the subject of the thesis.	Clearly identify and formulate the subjected problem and provide innovative solution.
2. Ability to critically read and integrate engineering literature.	No literature survey on the proposed thesis subject.	Partial but incomplete literature survey.	Provide complete literature survey, but missing good comprehensive integration.	Complete literature survey to cover all subjects of the thesis.	Complete literature survey to cover all subjects of the thesis with excellent integration.
3. Ability to use the techniques, skills, and tools necessary for computer science and engineering practice at an advanced level.	No theoretical formula, tool, and other means for solving the identified problem.	Limited tools and techniques used for solving the problem.	Provide reasonable techniques, skill and tools for solving the problem.	Provide good techniques, skill and tools for solving the problem at an advanced level.	Provide excellent and innovative techniques, skill and tools for solving the problem at an advanced level.
4. Ability to communicate effectively.	Poor presentation, cannot not handle committee questions.	Reasonable presentation, but does not handle well on committee's questions.	Good presentation, answer committee's questions.	Present thesis work clearly in a well-organized fashion. Handle well on committee's questions.	Excellent presentation, well organized. Answer all questions with comprehension.
5. Ability to understand Code of Ethics and professional practice for software engineers	Answer online quiz with <60% correctness	Answer online quiz with 60% - 70% correctness	Answer online quiz with 70% - 80% correctness	Answer online quiz with 80% - 90% correctness	Answer online quiz with 90%- 100% correctness



### Figure 2: Sample Online Quiz Question:

**Question 1 of 10** (worth 10 points)

In developing a proprietary set-top-box system for a small cable company, one of your co-workers uses some open-source code that is covered by the GNU public license which requires one to make source code freely available to other parties. Should you notify your customer of this fact?

- ☐ A. Yes, because it imposes legal restrictions upon the customer.
- ☐ B. No. This is just a coding choice.