

**Doctor of Philosophy  
in Nuclear Engineering  
Academic Assessment Plan  
2013-14**

Materials Science and  
Engineering

Nuclear Engineering  
Program

College of Engineering

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# 2013-14 Nuclear Engineering College of Engineering Academic Assessment Plan – PhD Degree

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## Mission Statement

*The Department of Materials Science and Engineering seeks to develop tomorrow's leaders in materials and nuclear sciences and engineering through cutting-edge educational programs, to perform high-impact research that benefits society, and to serve the needs of the state and nation.*

*The Nuclear Engineering Program (NEP) strives to serve the scientific and engineering community of the state and the nation by providing quality education in the field, conducting basic and applied research to enhance science in the field, and supplying short courses, technology transfer, industrial consulting and distance learning to promote engineering in the field.*

This mission is aligned with both the College of Engineering and university's mission. The college mission is:

*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 university's mission states in part:

*These three interlocking elements — teaching, research and scholarship, and service — span all 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 department's mission promotes these missions through its call for research and education activities to serve the state and nation.

## Student Learning Outcomes (SLOs)

### Content Knowledge

1. Identify unknown aspects of nuclear and/or radiological systems and formulate an approach to elucidating those aspects using engineering and/or scientific principles at a level appropriate to a doctoral research.
2. Demonstrate proficiency on appropriate experimental or computational techniques used for nuclear engineering research, and use these techniques to investigate various relationships

(atomic, nuclear, mechanical, materials performance, etc.) in nuclear systems at a level appropriate to doctoral research.

Skills

3. Obtain information from primary literature and technical reports, and integrate that information to reach conclusions regarding the current state-of-the-art and areas in which further research is needed.
4. Write and/or orally present the results of a research project or literature review in a manner that clearly communicates one or more of the following: current state-of-the-art, areas in which additional research is needed, research objectives, procedures, results, and conclusions.

Professional Behavior

5. Follow requirements for writing reports and research papers, and do so based on ethical standards regarding appropriate citation and plagiarism.
6. Work cooperatively with others, interact with supervisors, follow guidelines for appropriate management of data, and follow safety requirements for working in a research laboratory.

**Research**

The Doctor of Philosophy degree requires completion of core coursework, a comprehensive written qualifying examination, oral defense of a written research proposal, independent research, and a doctoral dissertation. Students seeking the Ph.D. degree are prepared for research activities through exposure to research topics and approaches in required graduate courses and through formal laboratory instruction by research advisors and senior researchers. Professional development is formalized through required coursework addressing career related topics, participating in graduate seminars, participation in professional societies, and attendance/presentation at local and national research meetings.

**Assessment Timeline**

Assessment Cycle for: Ph.D. in Nuclear Engineering, College of Engineering

Assessment	Assessment 1	Assessment 2
<b>SLOs</b>		
<b>Content Knowledge</b>		
Nuclear Engineering Fundamentals	Written qualifying examination	Oral Research Proposal Defense, Dissertation Defense
Experimental/computational proficiency	Dissertation Defense	
<b>Skills</b>		
Literature research/assessment of field	Oral Research Proposal Defense	Dissertation Defense
Technical presentation	Oral Research Proposal Defense	Dissertation Defense; Presentation at Professional Conference

<b>Professional Behavior</b>		
Technical writing/ethical reporting	Oral Research Proposal Defense	Dissertation Defense, Peer Reviewed Publications or Proceedings
Professional Interactions	Participation in Graduate Seminars	Attending and Presenting Research at a Professional Conference

## Assessment Cycle

Assessment Cycle for: Ph.D. in Nuclear Engineering, College of Engineering

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Analysis and Interpretation: May- June, ongoing at time of defense  
Improvement Actions: Completed by August 31  
Dissemination: Completed by September 30

SLOs	Year	10-11*	11-12*	12-13	13-14	14-15	15-16
<b>Content Knowledge</b>							
Nuclear Engineering Fundamentals				X	X	X	X
Experimental/computational proficiency				X	X	X	X
<b>Skills</b>							
Literature research/assessment of field				X	X	X	X
Technical presentation				X	X	X	X
<b>Professional Behavior</b>							
Technical writing/ethical reporting				X	X	X	X
Professional Interactions				X	X	X	X

\*Note: Data collection for these assessments began in the 2012-13 academic year. We did not collect data in prior years.

## Measurement Tools

The techniques used to assess the knowledge objectives are measured through graduate- and advanced-level courses and faculty members who teach the courses. Likewise, the skills objectives are evaluated by NE faculty instructors of the core and elective courses through individual assignments related to literature research and assessment of the current status of the NEP discipline, as well as the written PhD Qualification Exam. Technical presentation skills, technical writing abilities, as well as core and specialty competency are evaluated through the oral defense of a written research proposal. This evaluation is performed by a committee composed of four faculty familiar with the area of research, in turn composing the dissertation committee. The knowledge and skills learning objectives are also measured through an evaluation of the skills and capabilities demonstrated in the Doctoral Dissertation defense. The rubric of this evaluation is included below. Professional interaction objectives are measured through teaching assistant evaluation forms, evaluations by teaching faculty, and graduate research advisor at corresponding times during the path to degree.

Name: \_\_\_\_\_

UFID: \_\_\_\_\_

**PHD Dissertation  
Graduate Student Learning Outcomes Checklist**

Indicate if the student has successfully accomplished the following outcomes:

1. Student is able to identify unknown aspects of nuclear and/or radiological systems and formulate an approach to elucidating those aspects using engineering and/or scientific principles at a level appropriate to a doctoral research.

Yes  
 No

2. Student can obtain information from primary literature and technical reports, and can integrate that information to reach conclusions regarding the current state-of-the-art and areas in which further research is needed

Yes  
 No

3. Student demonstrates proficiency on appropriate experimental and/or computational techniques used in nuclear engineering research, and uses these techniques to investigate various relationships (atomic, nuclear, mechanical, materials performance, etc) in nuclear systems at a level appropriate to doctoral research.

Yes  
 No

4. Student demonstrates an ability to work cooperatively with others, interact with supervisors, follow guidelines for appropriate management of data, and follow safety requirements for working in a research laboratory

Yes  
 No

5. Student is able to follow requirements for writing reports and research papers, and does so based on ethical standards regarding appropriate citation and plagiarism.

Yes  
 No

6. Student is able to write and orally present the results of a research project in a manner that clearly communicates the project's objectives, procedures, results, and conclusions.

Yes  
 No

Date: \_\_\_\_\_

Supervisory Chair: \_\_\_\_\_  
Name (printed)

\_\_\_\_\_  
Signature

External Member : \_\_\_\_\_  
Name (printed)

\_\_\_\_\_  
Signature

## Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Scott S. Perry	MSE Associate Chair for Academics	ssp@mse.ufl.edu	6-3333
Simon Phillpot	MSE Chair	sphil@mse.ufl.edu	6-3782
Mark Law	COE Associate Dean	mlaw@ufl.edu	2-0943