Masters of Engineering in Materials Science and Engineering Academic Assessment Plan 2012-2013

Materials Science and Engineering

College of Engineering

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Materials Science & Engineering
College of Engineering
Academic Assessment Plan – ME Degree

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.

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 structure-property-processing relationships for a materials system and formulate an approach to elucidating those aspects using engineering and/or scientific principles at a level appropriate to a Masters student.

Skills

2. 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.
3. 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

4. Write reports and research papers following ethical standards regarding appropriate citation and plagiarism.

Research

The Materials Science and Engineering Program offers two tracks towards the Masters of Engineering (ME) degree. The ME Non-Thesis track entails only coursework and does not involve independent research. The ME Thesis track entails independent research conducted under the direction of a graduate research advisor.

The ME degree in Materials Science & Engineering totals 30 credit hours, typically in the form of 10 3-hour courses. Graduate courses in the MSE graduate program include general materials science and engineering courses as well as specialized courses on biomaterials, ceramics, composites, electronic materials, metals, and polymers. The degree plan requires the completion of five courses in specified topic areas and five elective topics.

Students seeking the ME Thesis 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.

Assessment Timeline

Assessment Cycle for: Masters in Materials Science and Engineering, College of Engineering

Assessment SLOs	Assessment 1	Assessment 2
Content Knowledge		
Structure –property relationships	Final Exams of EMA 6114 & EMA 6313	Thesis Defense
Skills		
Literature research/assessment of field	Literature assignment of EMA 6938“ Critical Analysis of Research”	Thesis Defense
Technical presentation	Presentation assignment of EMA 6938“ Critical Analysis of Research”	Thesis Defense
Professional Behavior		
Technical writing/ethical reporting	Writing assignment of EMA 6938 “Critical Analysis of Research”	Masters Thesis or Non-Thesis Paper, Peer Reviewed Publication or Proceeding

Assessment Cycle

Assessment Cycle for: Masters in Materials Science and 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

Year SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge						
Structure –property relationships	X	X	X	X	X	X
Skills						
Literature research/assessment of field			X	X	X	X
Technical presentation			X	X	X	X
Professional Behavior						
Technical writing/ethical reporting			X	X	X	X

Measurement Tools

The techniques used to assess the knowledge objectives are measured through advanced-level courses by faculty members who teach the courses. Likewise, the skills objectives are evaluated by MSE faculty instructors of the core and elective courses through individual assignments related to literature research and assessment of the current status of the MSE discipline. Technical presentation skills are delivered and evaluated through the Critical Analysis of Research course. For all students, the technical writing objective is evaluated through the assignments associated with the Critical Analysis of Research course and a required Non-Thesis paper or Masters Thesis (document), depending on their specific track. For students on the thesis track, the knowledge and skills learning objectives are also measured through an evaluation of the skills and capabilities demonstrated in the Thesis Defense. This evaluation is performed by a committee composed of three expert faculty familiar with the area of research. The rubric of this evaluation is included below.

Name _____ **UFID** _____

MS Thesis
Graduate Student Learning Outcome Checklist

Indicate if the student has successfully accomplished the following outcomes:

Student is able to identify unknown aspects of structure-property-processing relationships for a materials system and formulate an approach to elucidating those aspects using engineering and/or scientific principles at a level appropriate to a masters student.

- ☐ Yes
- ☐ No

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

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

Student is able to 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.

- ☐ Yes
- ☐ No

Date: _____

Supervisory Chair: _____ _____
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