

M.E. in Industrial and Systems Engineering Academic Assessment Plan 2012-2013

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 Industrial and Systems Engineering

College of Engineering

A. Mission

University

The University of Florida is a public land-grant, sea-grant and space-grant research university, one of the most comprehensive in the United States. The university encompasses virtually all academic and professional disciplines. It is the largest and oldest of Florida's eleven universities, a member of the Association of American Universities and has high national rankings by academic assessment institutions. Its faculty and staff are dedicated to the common pursuit of the university's threefold mission: teaching, research and service.

The University of Florida belongs to a tradition of great universities. Together with its undergraduate and graduate students, UF faculty participate in an educational process that links the history of Western Europe with the traditions and cultures of all societies, explores the physical and biological universes and nurtures generations of young people from diverse backgrounds to address the needs of the world's societies.

The university welcomes the full exploration of its intellectual boundaries and supports its 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 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 University of Florida must create the broadly diverse environment necessary to foster multi-cultural skills and perspectives in its teaching and research for its students to contribute and succeed in the world of the 21st century.

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 university aspires to advance by strengthening the human condition and improving the quality of life.

College

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.

Department

The Department's mission is to develop critical thinkers and provide Industrial Engineering and Operations Research solutions for complex analytical problems in business, government and society in general.

B. Student Learning Outcomes and Assessment Measures

SLO Type	SLO	Assessment Method	Delivery Mode
Knowledge	Proficiency in the core methodological and application areas of operations research and industrial engineering, including mathematical modeling and analysis of business problems, customized development of solutions for these problems, and the use of information technologies for solution delivery.	Students must maintain satisfactory classroom performance. Assessments are carried out by exams in the two required classes (ESI 6314: Deterministic Methods of Operations Research, and 6321: Applied Probability Methods in Engineering). Assessment is performed by the course instructors (who complete a scorecard.)	Campus/EDGE
Skills	Ability to apply methodology in the customized development of solutions for business problems, and the use of information technologies for solution delivery.	Assessment is through the successful completion of a project in a designated project course. A rubric is used to evaluate the analysis, proposed solution, and recommendations in the final written report.	Campus/EDGE
Professional Behavior	Ability to effectively and professionally communicate industrial engineering concepts and information in written and oral forms.	Assessment is through the successful presentation (oral and written) of a completed project in a designated project course. A rubric is used to evaluate the presentation materials and delivery as well as the report completeness and presentation.	Campus/EDGE

C. Research

The project course described in our skills section of the student learning outcomes allows students to apply their knowledge to a given course project.

D. Assessment Timeline

Program: M.S. in Industrial and Systems Eng.

College of Engineering

Assessment	Assessment 1	Assessment 2
SLOs		
Knowledge		

Proficiency in the core methodological and application areas of operations research and industrial engineering	Scorecards from instructors of ESI 6314 Deterministic Methods in Operations Research	Scorecards from instructors of ESI 6321 Applied Probability Methods in Engineering
Skills		
Ability to apply methodology in the customized development of solutions for business problems, and the use of information technologies for solution delivery.	Rubrics from instructors of designated project courses	
Professional Behavior		
Ability to effectively and professionally communicate industrial engineering concepts and information in written and oral forms.	Rubrics from instructors of designated project courses	

E. Assessment Cycle

Assessment Cycle for:

Program: M.S. in Industrial and Systems Eng. College of Engineering

Analysis and Interpretation:

June-August

Program Modifications:

Completed by November

Dissemination:

Completed by December

SLOs	Year	12-13	13-14	14-15	15-16
Knowledge					
Proficiency in the core methodological and application areas of operations research and industrial engineering		x	x	x	x
Skills					
Ability to apply methodology in the customized development of solutions for business problems, and the use of information technologies for solution delivery.		x	x	x	x
Professional Behavior					
Ability to effectively and professionally communicate industrial engineering concepts and information in written and oral forms.		x	x	x	x

F. Measurement Tools

The knowledge SLO is measured by means of scorecards (<http://www.ise.ufl.edu/about/sacs-accreditation/>) completed by instructors of ESI 6314 Deterministic Methods of Operations Research and ESI 6321 Applied Probability Methods in Engineering. These two required courses cover the core methodological and application areas of operations research and industrial engineering. The skills and professional behavior SLOs are measured by means of two rubrics (<http://www.ise.ufl.edu/about/sacs-accreditation/>) completed by instructors of designated project courses (ESI 6470 Principles of Manufacturing Systems Engineering, ESI 6529 Digital Simulation Techniques, ESI 6355 Decision Support Systems for ISEs, ESI 6552 Systems Architecture, ESI 6553 Systems Design, ESI 6555 Systems Management, EIN Web-based Decision Support Systems, EIN 6905 Special Problems). The rubrics assess the quality of the solution produced in the projects as well as the quality of the written reports and oral presentations. We attach these in the appendix for reference.

G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Joseph C. Hartman	ISE Department Chair	jchartman@ufl.edu	352-392-1464
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H. Appendix

Figure 1. Project Course Presentation Rubric.

Final Presentation						
CATEGORY \ POINTS		20	15	10	5	0
Presentation Delivery	x	Presentation flows with practice evident. Speakers are clear and engage audience.	Presentation flows with practice evident. Not all speakers engage audience.	Presentation flows with practice evident. No speakers engage audience.	Presentations suffers in parts due to lack of flow.	Presentation suffers from lack of flow with need of further practice.
Presentation Materials	x	Materials were appropriate and desgined well.	Materials were appropriate but with minor flaws (spelling, size, etc.)	Materials were appropriate but with major flaws (spelling, size, etc.)	Materials used were inappropriate.	No presentation materials utilized.
Problem Presentation		Problem and background presented clearly and succintly.	x Problem and background given, but not in sufficient detail.	Problem and background only noted briefly.	Problem presented briefly with no background information.	Problem not defined.
Solution Presentation	x	Solution approach effectively demonstrated and questions answered effeetively.	Solution approach effectively demonstrated.	Solution approach hard to follow.	Solution approach presentation incomplete.	Solution approach not presented.
Recommendation Presentation	x	Recommendations effectively presented, including risks and economics, and questions answered effeetively.	Recommendations effectively presented, including risks and economics.	Recommendations effectively presented, but risks or economics not covered.	Recommendations not presented effectively or unjustified.	No recommendations are presented.
Subtotal		80	15	0	0	0
Add/Reduce		0				
Total		95				

Comments

Figure 2. Project Course Final Report Rubric.

Final Report						
CATEGORY \ POINTS		20	15	10	5	0
Report Completeness	x	Report is complete with comprehensive executive summary.	Report has all necessary sections but executive summary is not complete.	Report is lacking a necessary section.	Report is lacking multiple sections.	Report does not follow proper format.
Assumptions	x	Reasonable assumptions stated clearly with justification.	Assumptions with justification, but not all reasonable.	Assumptions stated but justification lacking.	Assumptions stated incompletely and without justification.	No assumptions stated.
Analysis	x	Analysis is complete, methodology is sound and the explanation is clear.	Analysis is complete, methodology is sound but the explanation is not clear.	There are minor flaws in the analysis or methodology.	There are major flaws in the analysis or methodology.	There is no analysis.
Proposed Solution		Solution greatly exceeds the needs of customer.	x Solution exceeds the needs of customer.	Solution solves problem/meets needs of customer.	Solution partially solves problem/meets needs of customer.	Solution does not solve problem/meets needs of customer.
Recommendation	x	Recommended solution considers all viable factors, including risks, and is economically justified.	Recommended solution considers all viable factors and is economically justified but does not identify risks.	Recommended solution considers all viable factors but economic justification is incomplete.	Recommendations are incomplete and unjustified.	No recommendations are presented.
		80	15	0	0	0
Subtotal		95				
Add/Reduce		0				
Total		95				
Comments						