Program Assessment Plan - Graduate Programs:

Master of Science in Engineering Physics (113*/40.0801)

Version 1.1 – 2009-2010

Department of Physics and Astronomy
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Last Update: September 15, 2009
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Document Control Plan

This document, the “Program Assessment Plan – Graduate Programs: Master of Science in Engineering Physics,” will be housed in the Department of Physics and Astronomy and will be controlled by the Graduate Programs Assessment Coordinator as assigned by the Department Head. The document will be updated every five (5) years and approved by the Department Graduate Faculty by Reading Day in the Fall Semester based on input from Department Graduate Faculty and guided by the Task Force on Graduate Education or similar institutional bodies or governance. The document will be made available on the department website no later than the first day of classes in the Spring semester of each 5 year cycle. The document will be tracked by version number and academic year of applicability as specified below. The annual progress report is a separate document available yearly from the Graduate Programs Assessment Coordinator.

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Current document version:

Version 1.1 Academic Year: 2009-2010 Updated: September 15, 2009

Next version:

Version 2.0 Academic Year: 2012-2013

Recent Versions:


Original date of inception:

1.0 Mission and Vision Statements

Program: Master of Science in Engineering Physics (113*/40.0801)

Concentrations include:
   a. Master of Science in Systems and Laboratory Automation (113B)
   b. Professional Science Master's (PSM) in Instrumentation and Automation (113C)

Related programs: None

1.1 Mission Statement

The fundamental mission of the Master’s degree program in Engineering Physics at ASU is to provide a rigorous curriculum and research opportunities that emphasize the development of graduate students who can apply the knowledge to address the needs of 21st Century industries and society. This inherently requires that our programs are competitive with comparable programs nationwide. Our mission is achieved, in part, by offering graduate students distinctively relevant courses, research programs, and by maintaining a faculty who serve as excellent teachers and research mentors; who produce the highest levels of scholarship in our associated disciplines.

1.2 Vision Statements

The aspirations of the graduate faculty of the Department of Physics and Astronomy for the Master of Science in Engineering Physics include:

- A state-of-the-art curriculum that teaches 21st Century applied physics ideas, engineering physics practices, and hands-on experiences with laboratory instrumentation that is consistent with high-tech industrial and research standards. In order to achieve this objective, the department is committed to involving our graduate students in the highest levels of scholarship and research.
- A professional setting that is conducive to teaching, learning, and research for all faculty and students.
- An environment that encourages creative and innovative thinking.
- An environment that encourages diversity among faculty and students.
- Expansion of the program to include concentrations at the nexus of energy, environment, and high-tech societal needs. These expansion areas might include: nanoscience and advanced materials science; applied- and electro-optics; and perhaps the addition of an online master teacher (MAT) program for physics and physical science teachers.
- ABET accreditation for our M.S. in Engineering Physics
2.0 Program Goals

The goals for the Master of Science in Engineering Physics program are outlined below.

- Provide students with knowledge and skill sets necessary to pursue Engineering Physics careers primarily in industry, government, and academia.
- Provide concentrations in a traditional M.S. with emphasis on scientific Systems and Laboratory Automation and also a PSM in Instrumentation and Automation.
- Provide faculty with opportunities and incentives to continue as active scholars in research related to Engineering Physics and associated disciplines.
- Maintain or increase enrollment as enabled by the availability of assistantships and tuition scholarships provided by the University Administration.
- Enhance our enrollment with the addition of extramural funding for our graduate students.
- Maintain or increase the diversity among faculty and students.
- Increase the number of tenure track faculty to enable the offering of more courses and research opportunities to make the program competitive nationally – this is critically dependent on the availability of new tenure track and full-time positions provided by the University.
3.0 Outcomes

Outcomes of the Master’s Degree in Engineering Physics include both learning and program outcomes.

3.1 Learning Outcomes

Students will be able to…
1. Design, construct, and test engineering and/or scientific systems and program them for operation where appropriate.
2. Apply physics concepts to the research and development of new or improved technologies.
3. Obtain and analyze scientific data from laboratory or field instruments.
4. Cite relevant literature and concurrent work related to their field of study.
5. Disseminate results and conclusions from their work via written and oral communication.

3.2 Program outcomes

Changes that will result from ongoing efforts…
6. Maintain or increase the number of students in the program that complete the program
7. Maintain or increase the number of students enrolled in the program
8. Update and improve teaching materials and equipment.
9. Maintain or increase diversity among faculty and students.
4.0 Measurements and Criteria

4.1 Measurements

For each outcome, there are one or more measurements.

For learning outcomes 1-5, measurements include:

a. Number of Master’s theses or projects completed and defended
b. Grades from related courses
c. Percentage of students who obtain employment or are accepted to a Ph.D. program within 6 months of graduation

For program outcome 6,

d. The number of enrolled students who complete the program per the below criteria.

For program outcome 7,

e. The number of students enrolled in the program

For program outcome 8,

f. Amount of internal and external funding obtained to improve teaching materials and equipment.

For program outcome 9,

g. The percentage of students and faculty that are classified within a minority group.

4.2 Criteria

The criteria of measurement...

(a.) is that at least 50% of the enrolled students satisfactorily complete the Master’s thesis or project and defend them to their committee.

(b.) is that at least 75% of the enrolled students achieve and maintain a 3.0 GPA

(c.) is that 50% of the graduated students obtain employment within 6 months of graduation

(d.) is that at least 75% of the enrolled students satisfactorily complete the Master’s thesis or project and defend them to their committee.

(e.) is that the number of enrolled students increases by one every 2 years, provided that the number of assistantships and faculty resources increase as required.

(f.) is that capital expenditures for teaching equipment and materials matches that required to facilitate currently offered courses.

(g.) is that the percentage of students and faculty that are classified within a minority group either remains constant or increases over time.