Optics and Photonics Technology – Physics Department

OPT (PH)

MS Degree Program Option in the Department of Physics

Effective Date: 2015 November 01

A. Curriculum (for students with a physics background or interest in physics)

The curriculum consists of 6 broad areas (27 credit hours of coursework plus 6 credit hours of thesis research):

1. Optics Principles (6 credit hours)
   PH 541 Geometrical Optics
   PH 542 Physical Optics

2. Optical Systems and Optical Design and Manufacturing Technology (9 credit hours)
   Select any 3 of the following 3 credit hour courses:
   PH 546 Radiometry, Detectors, and Sources
   PH 570 Optical and Photonics Systems Design
   PH 671 Optical Fabrication
   EE 532 Optical Design
   OSE 654 Optical Testing
   OSE 670 Optomechanical Design and Manufacturing
   OSE 656 Lens Design
   OSE 710 Optical System Design
   OSE 690 Special Topics in Optical Science and Engineering

   Suggested as an additional 1 credit hour course:
   OSE 653 Optical Testing Laboratory
3. Management and Marketing (6 credit hours)
   Select 2 courses in one of the following 6 areas; or, take ISE 670 and EM 660:

1. Industrial and Systems Engineering
   ISE 526  Design and Analysis of Experiments
   ISE 530  Manufacturing Systems and Facilities Design
   ISE 670  Integrated Product and Process Design

2. Engineering Management
   EM 660  Engineering Management Theory
   EM 666  Engineering Project Management
   EM 766  Implementation of Technology

3. Management
   MGT 601  Introduction to Technology Development
   MGT 610  Strategic Management of Technology
   MGT 622  Management of Technical Professionals
   MGT 640  Principles of Project Management

4. Management Science
   MSC 500  Decision Support Systems and Expert Systems
   MSC 600  Operations Management

5. Marketing
   MKT 600  Survey of Marketing Management
   MKT 604  New Product Development
   MKT 606  Marketing in a High Technology Environment

6. Management Information Systems
   MIS 634  Management of Information Technology
   MIS 660  Information Security Management
   MIS 670  Business Contingency Planning
4. Technical Electives (6 credit hours)
A minimum of 6 hours in Technical Electives in a single area is required. All of
the following are physics courses; thus taking any 2 of the following courses
meets the minimum requirement of concentration within an area. Most of the
courses listed have no graduate prerequisite but the catalog should be consulted
for confirmation.

PH 651  Quantum Mechanics I
PH 652  Quantum Mechanics II
PH 544  Optoelectronics
PH 560  Introduction to Solid State Physics I
PH 561  Introduction to Solid State Physics II
PH 531  Introduction to Plasma Dynamics
PH 631  Electricity and Magnetism I
PH 732  Electricity and Magnetism II
PH 645  Lasers
PH 632  Fourier Optics
PH 642  Optical Physics
PH 680-689 Selected Topics
PH 733  Quantum Devices/Nonlinear Optics

5. Thesis Research PH 699 (6 credit hours)
These hours may be taken any time research work is being done under the
guidance of a Physics Department faculty member. Additional hours of thesis
may be taken; however, additional thesis hours cannot be used as a substitute for
coursework hours. Approval by the student’s Physics Department research
advisor or supervisory committee chairman is required to enroll in PH 699.

6. Physics Seminar
All OPT (PH) students are required to complete a minimum of 2 semesters of PH
792, Physics Seminar, with a grade of “S”. Seminar hours do not count toward the
27 hours of required coursework or toward the 6 hours of thesis.
B. Supervisory Committee

The OPT (PH) graduate student, in conjunction with his academic advisor, should complete a formal program of study and form a supervisory committee before 12 hours of graduate coursework have been completed, or earlier if a research topic has been decided upon.

The supervisory committee is composed of at least 3 members, one of which is the chairman of the committee. Normally the student’s research advisor is also the chairman of the committee, but this is not a requirement. All committee members must be members of the Graduate Faculty of the University of Alabama in Huntsville. The chairman of the committee will be a full time faculty member of the Physics Department.

The student should prepare a brief research proposal and submit it, through his chairman, to the entire committee and request their input early in the research. The physics department policy is that each graduate student having a supervisory committee will meet with that committee at least once every semester. This policy is definitely in the student’s best interest and will assure direction and timely completion of the thesis. The supervisory committee must approve the program of study. The committee may require courses not listed above, in addition to the minimum courses. The signed and approved program of study is a contract with the student. All committee members, as well as others, as required by the Graduate School, must approve changes in a previously approved program of study.

C. Diploma

The student’s diploma will say “Master of Science Physics.”

The transcript will say “Master of Science Physics OPT.”