

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."