

Introduction to Optics

TuTh 1:00-2:15 pm (plus two hours of laboratory time per week to be scheduled)

109 Lewis Hall (The laboratory is held in Lewis 203)

Prof. Joel Mobley

My office is at the NCPA, Room 1034 – ph:915-6937

jmobley@olemiss.edu (E-mail is the best way to communicate with me.)

Office Hours: Wed 11-2p, 1034 NCPA

Other times by appointment at NCPA: MWF

Final Exam is Thursday, May 10th at 12 pm. The final is comprehensive.

Grading

Homework/Class participation	15 %
Laboratory	25 % NOTE: you must earn at least 60% of these points to pass.
Midterm Exams (2)	20 %
Final Exam	20 %

Grading Scale

A: 100.0 – 92.0	B+: 87.4 – 82.5	C+: 74.9 – 70.0	D: 62.4 – 50.0
A-: 91.9 – 87.5	B: 82.4 – 78.5	C: 69.9 – 66.0	
	B-: 78.4 – 75.0	C-: 65.9 – 62.5	F:<50.0

Textbook – *Optics*, 5th Ed., by Eugene Hecht (ISBN-13: 978-0133977226)

Course Description – Intermediate description of electromagnetic wave propagation; topics in geometrical and physical optics including interference diffraction, polarization, and laser physics; lab exercises in physical and geometrical optics.

Learning Objectives

At the completion of this course, the student should be able to describe optical and general wave phenomena in terms of the ray, wave and particle models and make appropriate use of these to solve problems. They should also be able to quantitatively link diffraction, interference, reflection and transmission phenomena to the physical properties of waves, and the interaction of light with matter and materials.

Rules

- Quizzes may be given depending on attendance. Points will be folded into Midterm Exams scores.
- Class participation is required. You are expected to give thoughtful responses even if you don't know the answer. The intent is to help you think through issues, and a respectful attitude toward your fellow students is expected. Students will be paired together in order to answer questions and work problems during class.
- Instructors are required to enter attendance verifications for each of their courses by the end of the second week of regular Fall/Spring semester. If you will be absent during the initial two weeks, inform me beforehand (email is ok)
- Refrain from distracting behavior (texting, web surfing, checking email, etc...). Be considerate of your fellow students.
- Attendance will be taken in the lab each week. There are no makeups without an official excuse. After two unexcused absences, the loss of points per lab will be doubled.
- Lab reports that are more than two weeks overdue will not be accepted.

Topics Covered

- Properties of waves
- Electromagnetic waves
- Ray optics
 - Propagation in materials, at boundaries
 - Image formation
 - Lens systems
- Physical optics and wave phenomena
 - Polarization
 - Diffraction
 - Interference
 - Coherence
- Modern Optics
 - Quantum Physics
 - Lasers
- Selected topics (fiber optic waveguides, etc...)

Laboratory

The laboratory part of the course requires two hours a week. These will be scheduled during the first week of class. These are typically held on Monday, Wednesday and/or Thursday afternoons to end by at least 6 pm. Laboratories will meet each week after the second week of class. The labs may be scheduled in two sessions in order to accommodate everyone's schedules.