

Physics 319

Introduction to Optics

MWF 1:00-1:50 pm (plus two hours of laboratory time to be determined)

109 Lewis Hall

Prof. Joel Mobley

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

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Office Hours: Tu 1:00-2:30 in the Optics Lab

Other times by appointment at NCPA: Wed, Fri 1:00-4:30.

Final Exam is Wednesday December 11th at 12 pm. The final is comprehensive.Grading

Homework	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, 4th Ed., by Eugene Hecht (ISBN: 0-8053-8566-5)

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 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 light, 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.
- Do not use communication devices during class (e.g., no texting, etc...)

Topics Covered

- Electromagnetic waves
- Properties of light
- Light and matter
 - Propagation in materials, at boundaries
- Ray optics
 - Image formation
 - Lens systems
- Physical optics
 - 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 scheduled on Monday, Wednesday and/or Thursday afternoons to end by at least 6 pm. Tuesday is also a possibility but these sessions must end by 4 pm.

Laboratories will meet each week after the second week of class.

Important Dates

August 25 th	Last day to drop without penalty
September 9 th	Labor Day Holiday
October 7 th	Last day to drop
November 25 th -29 th	Thanksgiving Holiday
December 6 th	Last Day of Class
December 11 th	Final Exam