PHYS 609
Modern Optics
Fall 2020

Instructor: Dr. Anthony M. Johnson
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Class: Tuesdays and Fridays
1:00PM – 2:15PM

Office Hours: Thursdays
10:30AM – 12:00PM, Web
Or Through Email Appointment

Text: Eugene Hecht: Optics (4th Edition)
Lecture Notes and Slides: e.g., Rick Trebino (Georgia Institute of Technology) and others

Reference: Robert Guenther, Modern Optics (1st or 2nd Edition)

Prerequisites: Basic electromagnetic theory, basic theory of ordinary differential equations, vector analysis

- There will be an in-class mid-term and final exam. There will be no exam make-up except for University-policy accepted absence.
- Each student will be required to give a 15-minute oral presentation on a topic in Modern Optics. Please select your topic by Friday, October 16th at the latest. Classmates will also judge the presentation based on clearness, content, and classmates understanding of the topic.
- Each student will write a term paper on a topic in Modern Optics. The topic could be the same as the oral presentation and could be related to the student's research. A good term paper should be stand alone and include all the necessary components, which typically includes a literature review, theory/experimental outline, applications and summary.

Grading:

Homework:	20%
Presentation/Discussion:	10%
Term Paper:	10%
Mid-term Exam:	30%
Final Exam:	30%

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Course Topics:

Maxwell's Equations and EM Wave Theory
EM Spectrum
Absorption and the Refractive Index
The Propagation of Light
Fresnel's Equations of Reflection and Refraction
Fourier Series and the Fourier Transform
Polarization
Geometrical Optics
Interference and Diffraction
Coherence
Lasers and Nonlinear Optics
Ultrafast Optics

Also Teaching: CMPE 306, Introductory Circuit Theory
Lecture – M, W, 1:00PM - 2:15PM
Lab - Tu, 11:00AM – 12:50PM
Tu, 1:00PM – 2:50PM
Fr, 1:00PM – 2:50PM