

Applied Physics 023: Demonstration Lectures in Optics

(Winter, 2011)

Instructor:

Nan Yu

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(email will be the best option for any initial contact)

Lectures:

F 4:00-5:55 PM, Moore Rm 070

Teaching Assistants:

TBD

Office: TBD

Office Hours: TBD

email: TBD

Website:

TBD

Course work:

1 HW/week (~ 8 HW sets). HW will be given out during Friday's class, and due the following Friday at the end of the class. HW solutions are expected to be detailed, descriptive, analytical, and showing process and steps. HW Constitutes 80% of your grade. There will be no exams in this class. This is a demonstration lecture; the class attendance is important and will count towards 20% of the grade.

Policies:

Homework: Work out the details of solutions on your own. Use of any texts, any notes, computers, etc. is fine. For MATLAB and Mathematica output please provide brief (but comprehensible) commentary.

Collaboration on HWs is allowed, but only limited to the understanding the problems or physics.

Late Homework: Not accepted, except one HW within one week with 50% credit.

Textbooks and References:

Required Textbook:

E. Hecht, *Optics* (Addison-Wesley, New York, NY, 2002), 4th ed.

Recommended for supplemental reading:

A. E. Siegman, *Lasers* (University Science Books, Sausalito, CA, 1986).

A. Yariv, *Optical Electronics* (Saunders College Publishing, a division of Holt, Rinehart and Winston, Inc., Orlando, Florida, 1991), 4th ed.

B. E. A. Saleh and M. C. Teich, *Fundamentals of Photonics* (John Wiley & Sons, Inc., New York, NY, 1991).

M. Born and E. Wolf, *Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light* (Cambridge University Press, New York, NY, 1998), 6th ed.

Course Outline: Nine demonstration lectures on optics covering the following topics.

- Nature of Light and Review of Geometric Optics
- Light Propagation in Media and Interfaces
- Light Polarization and Applications
- Interference and Interferometers
- Diffraction
- Fourier Optics
- Special Topic Discussions