

## Physical Optics

**Instructor:** Oksana Ostroverkhova, oksana@science.oregonstate.edu

**Textbook:** *Optics* (4<sup>th</sup> Ed.), E. Hecht

**References:** 1. *Principles of Optics*, M. Born and E. Wolf  
 2. *Introduction to Modern Optics*, G. Fowler  
 3. *Fourier Optics: an introduction*, E. G. Steward  
 4. Optics I course (lectures available on-line) ,  
 by R. Trebino at Georgia Tech U :  
<http://www.physics.gatech.edu/gcuo/UltrafastOptics/>

**Office hours:** Weniger 413, Tu 1 – 2 PM, Fri 1 – 2 PM

### Course outline:

Electromagnetic waves.	(Chapters 1-3)	week 1
Addition of waves. Interference.	(Chapters 7.1, 9.1, 9.2, 9.4.2)	week 2-3
Diffraction.	(Chapter 10)	week 3-5
Light propagation in the medium.	(Chapters 4.1-4.8)	week 6
Interference effects in media. Interferometry.	(Chapters 9.4-9.8)	week 7
Polarization. Birefringence.	(Chapter 8.1-8.10,7.2)	week 8
Intro to Fourier Optics.	(Chapter 11.1-11.2)	week 9
Geometric Optics. Intro to modern optics.	(Chapters 6.1, 6.3, 13)	week 10

### Homework:

Homework will be handed out at every lecture. Solutions should be turned in the next lecture (e.g. homework handed out on Monday January 5 is due Wednesday January

7, etc.), unless specified otherwise. Late homework will not be accepted, since the homework solutions will be available immediately after the due time.

**Worksheets:**

In order to help you check your understanding of the material and provide feedback for me, worksheets will be handed out at (almost) every lecture for in-class work. Filled out worksheets will be collected, graded, and returned at the next lecture.

**Exams:**

We will have one in-class midterm (tentative date February 9) and a final exam (Wednesday, March 18 at 9:30-11:30 AM). Note that questions based on your lab assignments may also come up at the midterm and/or exam.

**Grading Policy:**

Homework (total)	20%
Worksheets (total)	10%
Labs (total)	20%
Midterm	20%
Final	30%