
Physics 375 Syllabus

— Optics —
Spring 2022

Instructor

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Department of Physics

Office Hours: Tue 9:30-10:30, Wed: 1-3

Portland Campus

and by Appointment

Course Description: This course on optics discusses the nature of light in both the geometrical optics limit and the physical optics limit. We discuss how physicists have come to “understand” light; or more appropriately, how light appears to behave. This course assumes a good familiarity with calculus and uses differential equations and other tools as needed to model the behavior of light.

Textbook:

Optics, 5th edition

Eugene Hecht. Peason. This is our main text for the course, and we’ll follow along through selected portions of the first 10 chapters (as time allows!)

OTHER REFERENCES**Fundamentals of Optics**

Francis A. Jenkins & Harvey E. White

This is a classic text, any edition is a fine reference; out of print, but used copies are available online.

Introduction to Classical and Modern Optics, 4th ed

Jurgen R. Meyer-Arendt, Prentice-Hall

Introduction to Optics, 2nd ed.

Frank L. Pedrotti, S.J., and Leno S. Pedrotti, Prentice-Hall

The Feynman Lectures on Physics

Richard P. Feynman, Addison-Wesley, 1964 (an EXCELLENT reference, and free online)

Attendance Policy:

I expect that everyone will be at every class except in extenuating circumstances. If I find that you are missing class too often (i.e. more than three times), you can expect that I will talk with you and that you will likely receive a lower grade for the course, or asked to leave if this repeated absence is coupled with poor quality work written work. If you miss a class in which a test is given, you will not be given a makeup except in truly *exceptional* cases or if you have prearranged due to a conflict.

Outside Help/Office Hours:

In general, if my office door is open, I am happy to help you, so feel free to stop in and ask questions.

Assessment

I am obligated to assign a letter grade for each person enrolled in this course. This grade will best reflect my *subjective* sense of your level of understanding of the physics we discuss in this class. In addition, I will base this on your performance on 2 exams, Weekly problem sets, and a comprehensive final exam as follows:

Exam # 1	Thursday, 17 Feb, 2022	100 pts
Exam # 2	Thursday, 7 Apr, 2022	100 pts
Problem Sets	Roughly weekly	600 pts
Final	Tuesday, 3 May, 2022: 11:00–13:00	200 pts
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Total Points		1000

Important note on problem sets:

I encourage you to neatly handwrite your problem set solutions. Neatness and legibility count. In addition, your solutions should be written as if the audience is a student at another university optics course looking for help in understanding the solution to the problem. As such, you should *lead the reader through the solution by appealing to relevant physical principles* and you should write in grammatically correct english. The well written problem set will read like an excellent solution manual, starting with a statement of the original question, and a solution with textual descriptions interspersed with important mathematical equations (as well as pictorial and graphical descriptions when needed) placed on a separate line, centered on the page. *A problem set solution with only mathematical equations and no narrative description will receive at most 70% credit.*

**** Late problem sets will lose 50% per day late.**

Grading Scale

A	A-	B+	B	B-	C+	C	C-	D	F
930-1000	890-929	870-889	830-869	790-829	770-789	730-769	690-720	600-689	0-599

Detailed Reading and Assignment Schedule

The schedule below is tentative, although I will keep the exam dates fixed.

Date	Reading	Events
18 Jan	1.1–1.5 & 2.1–2.4	
20 Jan	2.5–2.10	
25 Jan	3.1–3.2	
27 Jan	3.3–3.4	
01 Feb	3.4–3.7	
03 Feb	4.1–4.4	
08 Feb	4.5–4.6	
10 Feb	4.7–4.11	
15 Feb	5.1–5.2	
17 Feb	EXAM 1	EXAM 1
22 Feb	5.3–5.4	
24 Feb	5.5–5.7	
01 Mar	6.1–6.2	
03 Mar	TBD	
08 Mar	6.1–6.2	
10 Mar	6.3–6.4	
15 Mar	No Class	Spring Break
17 Mar	No Class	Spring Break
22 Mar	7.1–7.2	
24 Mar	7.3–7.4	
29 Mar	8.1–8.3	
31 Mar	8.4–8.6	
05 Apr	9.1–9.3	
07 Apr	EXAM 2	EXAM 2
12 Apr	9.4–9.6	
14 Apr	9.7–9.8	
19 Apr	10.1–2	
26 Apr	10.2–10.3	
28 Apr	10.3–10.4	
3 May	FINAL EXAM	11:00–13:00