

**PHY 410 – Optics  
Fall 2020**

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**Office Hours:** Monday – 10 to 12:30  
 Wednesday – 10 to 12:30

**Phone:** 610-436-3010  
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**Required Materials:**

*Physics of Light and Optics* by Peatross and Ware (2015 edition)

A PDF of this book is available for free at [optics.byu.edu](https://optics.byu.edu). Information is provided on the site to purchase a low-cost version.

**Matlab**

Please use the University site license to install Matlab on your personal computer. To download Matlab, use this website ...

<https://www.mathworks.com/academia/tah-portal/west-chester-university-of-pennsylvania-40730091.html>

**Course Description:** Geometrical and physical optics. Reflection and refraction at surfaces, lenses, interference and diffraction, and polarization.

**Course Student Learning Outcomes:**

Outcome A: Knowledge and Understanding of the Concepts and Principles of Physics

**Meeting:** Meet Tuesday and Thursday over ZOOM 12:30 pm to 1:45 pm

**Attendance Policy:** Students are expected to attend all lectures. Missing class will negatively impact a student's attendance & preparation grade.

**Evaluation & Grading:**

45% - Midterm exams (3 × 15% each)  
 10% - Attendance & Preparation  
 20% - Problem Sets  
 25% - Oral Final Exam

Total: 100%

A letter grade will be assigned based on performance in the course according to the following scale:

Grade	Quality Points	Percentage Equivalents	Interpretation
A	4.00	93-100	Excellent
A-	3.67	90-92	
B+	3.33	87-89	Superior
B	3.00	83-86	
B-	2.67	80-82	
C+	2.33	77-79	Average
C	2.00	73-76	

C-	1.67	70-72	
D+	1.33	67-69	Below Average
D	1.00	63-66	
D-	0.67	60-62	
F	0	< 60%	Failure

Refer to the Undergraduate Catalog for description of NG (No Grade), W, Z, and other grades.

#### Tentative Course Outline:

Class Meeting	Date	Day	
1	8-25	Tues	Intro and Maxwell's Equations
2	8-27	Thur	Polarization (the other meaning) and the Wave Equation
3	9-1	Tues	Plane wave (Not plain waves! They can be quite complex.)
4	9-3	Thur	Lorentz Model
5	9-8	Tues	Reflection, Refraction, and Fresnel Coefficients
6	9-10	Thur	Reflectance, Transmittance, Brewster and Critical Angle
7	9-15	Tues	Fabry-Perot Instruments
8	9-17	Thur	Multi-Layer Coatings
9	9-22	Tues	Review
10	9-24	Thur	<b>Exam #1</b>
11	9-29	Tues	Chapter 5
12	10-1	Thur	Chapter 5
13	10-6	Tues	Chapter 6
14	10-8	Thur	Chapter 6
15	10-13	Tues	Chapter 7
16	10-15	Thur	Chapter 7
17	10-20	Tues	Chapter 8
18	10-22	Thur	Chapter 8
19	10-27	Tues	Review
20	10-29	Thur	<b>Exam #2</b>
21	11-3	Tues	Chapter 9
22	11-5	Thur	Chapter 9
23	11-10	Tues	Chapter 10
24	11-12	Thur	Chapter 10
25	11-17	Tues	Chapter 11
26	11-19	Thur	Chapter 11
	11-24	Tues	*** Thanksgiving Break ***
	11-26	Thur	*** Thanksgiving Break ***
27	12-1	Tues	Review
28	12-4	Thur	<b>Exam#3</b>
			Finals Weeks – Oral Exams

### COVID-19 STATEMENT

Part of West Chester University's response to the COVID-19 pandemic was to switch the vast majority of instruction to remote. This decision was made out of an abundance of caution to protect the health of all members of the WCU community. Faculty have been asked to make every effort to adapt their courses to this novel situation while still meeting the critical learning outcomes of the course. Students are asked to discuss any problems with the new course format and schedule directly with their instructors. Patience and flexibility on everyone's behalf are critical to our community's navigation of this public health crisis.

For this particular course, the following alternative modalities are being utilized: The class will be meeting synchronously over ZOOM during lecture hours rather than on-campus.

### ACADEMIC & PERSONAL INTEGRITY

It is the responsibility of each student to adhere to the university's standards for academic integrity. Violations of academic integrity include any act that violates the rights of another student in academic work, that involves misrepresentation of your own work, or that disrupts the instruction of the course. Other violations include (but are not limited to): cheating on assignments or examinations; plagiarizing, which means copying any part of another's work and/or using ideas of another and presenting them as one's own without giving proper credit to the source; selling, purchasing, or exchanging of term papers; falsifying of information; and using your own work from one class to fulfill the assignment for another class without significant modification. Proof of academic misconduct can result in the automatic failure and removal from this course. For questions regarding Academic Integrity, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to the Department Undergraduate Handbook, the Undergraduate Catalog, the Ram's Eye View, and the University website at [www.wcupa.edu](http://www.wcupa.edu).

### STUDENTS WITH DISABILITIES

If you have a disability that requires accommodations under the Americans with Disabilities Act (ADA), please present your letter of accommodations and meet with me as soon as possible so that I can support your success in an informed manner. Accommodations cannot be granted retroactively. If you would like to know more about West Chester University's Services for Students with Disabilities (OSSD), please visit them at 223 Lawrence Center. Their phone number is 610-436-2564, their fax number is 610-436-2600, their email address is [ossd@wcupa.edu](mailto:ossd@wcupa.edu), and their website is at <https://www.wcupa.edu/universityCollege/ossd/>. In an effort to assist students who either receive or may believe they are entitled to receive accommodations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, the University has appointed a student advocate to be a contact for students who have questions regarding the provision of their accommodations or their right to accommodations. The advocate will assist any student who may have questions regarding these rights. The Director for Equity and Compliance/Title IX Coordinator has been designated in this role. Students who need assistance with their rights to accommodations should contact them at 610-436-2433.

### EXCUSED ABSENCES POLICY

Students are advised to carefully read and comply with the excused absences policy, including absences for university-sanctioned events, contained in the WCU Undergraduate Catalog. In particular, please note that the "responsibility for meeting academic requirements rests with the student," that this policy does not excuse students from completing required academic work, and that professors can require a "fair alternative" to attendance on those days that students must be absent from class in order to participate in a University-Sanctioned Event.

### REPORTING INCIDENTS OF SEXUAL VIOLENCE

West Chester University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. **Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University Protection of Minors Policy.** Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: <https://www.wcupa.edu/admin/diversityEquityInclusion/sexualMisconduct/default.aspx>

**EMERGENCY PREPAREDNESS**

All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information, visit [www.wcupa.edu/wcualert](http://www.wcupa.edu/wcualert). To report an emergency, call the Department of Public Safety at 610-436-3311.

**ELECTRONIC MAIL POLICY**

It is expected that faculty, staff, and students activate and maintain regular access to University provided e-mail accounts. Official university communications, including those from your instructor, will be sent through your university e-mail account. You are responsible for accessing that mail to be sure to obtain official University communications. Failure to access will not exempt individuals from the responsibilities associated with this course.