The University of Iowa
The College of Liberal Arts and Sciences
Fall 2025

Title of Course: Introduction to Optics (PHYS:4720)

Course meeting time and place: LR2 Van Allen, MWF 2:30 pm to 3:20 pm

Department of Physics: https://physics.uiowa.edu/

Course ICON site: To access the course site, log into Iowa Courses Online (ICON) using your Hawk ID and password.

Course Home

For Undergraduate Courses: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.
For Graduate Courses: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the policies and procedures for its courses. Graduate students, however, must adhere to the academic deadlines set by the Graduate College.

Instructor

Name: Prof. John Prineas

Office location: 138 Iowa Advanced Technology Center

Student drop-in hours: Tue 10:30-12 pm and Wed 11-12:30 pm or by appointment

Phone: 319-335-3347

E-mail: john-prineas@uiowa.edu

DEO: Professor Greg Howes, available for appointment via Cory Langfitt, 203 Van Allen, 335-0654

Description of Course

This course will examine of the basics of waves, how light interacts with matter, and how light reflects, refracts, scatters, and propagates through material media (dielectrics, metals, optically active and birefringent material), optical components (lenses, objectives, beamsplitters, prisms, waveplates), systems and physical structures. We will also look at multi-beam interference in thin films and interferometers, and near and far field diffraction. Finally, we will examine Fourier optics, the basics of coherence theory, and introduce lasers and nonlinear optics.

Learning Goals – See the ICON site for chapter-by-chapter learning goals

Textbook/Materials

The required textbook for this course is: Hecht, Optics, 5th Ed.

Prerequisities - (PHYS:1512 or PHYS:2703 or PHYS:1612) and (MATH:1560 or MATH:1860)

Homework

- Homework turned in late will be marked down
- Your worst homework score will be dropped
- Your homework is expected to be your work only. You are encouraged to work on it with classmates, but the final writeup should be your own. You should not copy online solutions, copy classmates' solution, or copy a ChatGPT solution, which is a breach of academic honesty, will hurt your performance on exams, and impede learning objectives.
- ChatGPT:
    - Permitted use:
        - Conceptual clarification
        - Supplemental learning
        - Documentation – if ChatGPT is used for conceptual clarification in a homework, it should be noted how it was used
    - Prohibited for direct problem solving
- Start your homework early, and if you have problems, I encourage you to visit me during my office hours.

Where to Get Help

If you need help with homework problems or understanding course material, I encourage you to stop by my office. I also encourage you to work with your classmates.

Exams: The two in-class exams will cover material from approximately half of the course, including information presented in lecture and readings; the final exam will be comprehensive. The exams will test student's knowledge in applying course concepts to solve problems. You will get practice solving problems through weekly homework problems. We will review course material a week before the exam. Suggested study techniques for the exam are to review course material, review homework problems, and do additional practice problems.

Date and Time of the Final Exam

The final examination date and time will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam. According to Registrar's final exam policy, students have a maximum of two weeks after the announced final exam schedule to request a change if an exam conflict exists or if a student has more than two exams in one day (see the policy here).

Grading System and the Use of +/-

Pluses and minuses will be used in the grading for this course

Final grades will be awarded based on the following ranges:

A	B	C	D	F
A+ 94-100	B+ 76-81	C+ 58-63	D+ 40-45	F < 28
A 88-93	B 70-75	C 52-57	D 34-39	
A- 82-87	B- 64-69	C- 46-51	D- 28-33	

Course Grades

Final course grades will be assessed based on your performance in the following activities: Exam 1: 28.3% Exam 2: 28.3% Final: 28.3% Homework: 15%. You can check your scores on exams on the course webpage via ICON.

College of Liberal Arts and Sciences (CLAS) Course Policies Attendance and Absences

You are expected to attend all classes unless your absence is excused according to University policy.

Course Calendar of Assignments and Exams

- Homeworks will be assigned each Fr, and will be due the following Fr. These will be problems from the course textbook.
- There will be two in-class exams and a final. The first in-class exam is scheduled for M Oct 6; the second for W Nov 19.
- There are reading assignments for each class. Refer to the below schedule.

Communication: UI Email

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community.

Drop Deadline for this Course

You may drop an individual course before the drop deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course here**.** When you drop a course, a "W" will appear on your transcript. The mark of "W" is a neutral mark that does not affect your GPA. To discuss how dropping (or staying in) a course might affect your academic goals, please contact your Academic Advisor. Directions for adding or dropping a course and other registration changes can be found on the

Registrar's website**.** Undergraduate students can find policies on dropping CLAS courses here**.** Graduate students should adhere to the academic deadlines and policies set by the Graduate College.

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the CLAS Code of Academic Honesty. Undergraduate academic misconduct must be reported by instructors to CLAS according to these procedures. Graduate academic misconduct must be reported to the Graduate College according to the Graduate College Manual.

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor, and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact CLAS Undergraduate Programs for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS Dean's Office when additional support is needed.

Date-Week of	**Reading Assignments**
Aug 25	Review Chapts 2-3
Sept 1	Chapt 4 The Propagation of Light
Sept 8	Chapt 4 cont. Chapt 5 Geometrical Optics
Sept 15	Chapt 5 cont.
Sept 22	Chapt 6 More Geometrical Optics Chapt 7 The Superposition of Waves
Sept 29	M: Review WF: Chapt 7 cont.
Oct 6	M: Midterm Exam 1 WF: Chapt 8 Polarization
Oct 13	MWF Chapt 8 cont.
Oct 20	MWF: Chapt 9 Interference.
Oct 27	MWF: Chapt 10 Diffraction
Nov 3	MWF: Chapt 11 Fourier Optics
Nov 10	M: Chapt. 11 cont. W: Review

	F: Chapt 12 Basics of Coherence Theory
Nov 17	MF: Chapt. 12 cont. W: Midterm Exam 2
Nov 24	Thanksgiving Break
Dec 1	M: Chapt 12 con.t. WF: Chapt 13 Modern Optics
Dec 8	MW: Chapt 13 cont. F: Review

University Policies

University policies

Accommodations for Students with Disabilities
The University is committed to providing an educational experience that is accessible to all students. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through Student Disability Services (SDS). SDS is responsible for making Letters of Accommodation (LOA) available to the student. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide.

Free Speech and Expression
Absences for Religious Holy Days
Non-discrimination
Classroom Expectations
Sexual Harassment/Misconduct and Supportive Measures
Conflict Resolution
Mental Health
Basic Needs and Student Support
Sharing of Class Recordings
Absences from Class
Absences for Military Service Obligation