

Phys 708 - Optics
Fall 2018
M-W-F 9:10-10:00 AM; T 8:10-9:30 AM, DeMeritt 238

Professor: Amy Keesee, Physics Department and Space Science Center
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Office hours: Wed 2-3pm or by appointment

Books: **Main Text:** *Introduction to Optics*, 3rd ed.,
by Pedrotti³
Supplementary Text:
Introduction to Modern Optics, by Fowles

Grading: Exams 50%
HW 30%
Labs 20%

Course objectives: This course will introduce students to the theory of light, wave motion and propagation, geometric optics (image forming), superposition, polarization, interference, diffraction and coherence. By the end of the course, students will have a solid foundation in understanding the physical principles of light and the propagation of light.

Lectures: The lectures will be organized around the material covered in the text and will generally follow the text. Group work will be incorporated, especially during Tuesday sessions. Each student will present something from the group work in class, which will count as a homework grade.

Exams: There will be two 1-hour exams and a final exam. Exams will cover the lecture and homework material. The final exam will be weighted 20%; the 1-hour exams will be weighted 15% each.

Homework: Homework problems will generally be assigned with each lecture and due as a weekly set at the first class meeting of the following week (generally Monday). Select problems will be graded. Many of the answers appear in the back of the book, so please show your work. Credit will not be given for answers without clear supporting work. You are encouraged to work with your classmates, but please turn in your own work.

Labs: Labs will be performed approximately bi-weekly, by teams of two students. During lab weeks, the relevant physics and the experimental setup will be described in class. Each team will then do the lab at a time that fits their schedule, subject to other constraints (availability of the room and the instructor). A lab will typically take two hours. A team lab report will be due in the following week. Reports will be graded. Available labs, subject to change:

- Geometric Optics
- Double Slit
- Faraday Rotation
- Integrating Sphere
- Elastic (Mie) light scattering
- Spectral Analysis of various light sources, reflection from and transmission through objects
- Inelastic (Raman) light scattering

Honors students: The course may be taken for Honors credit. This requires extra work, which might include development of new labs, a research project, etc.

Expectations:

1. To ensure a climate of learning for all, disruptive or inappropriate behavior may result in removal from this class. As a reminder, cell phone, etc. use, including text messaging, is not permitted in this class by Faculty Senate rule unless by instructor permission.
2. Regular attendance is expected; please contact me with requests for exceptions.
3. As a student taking this class, you are bound by the UNH Code of Conduct, described at http://www.unh.edu/ocm/coc_main.htm. That documents includes descriptions of plagiarism, cheating, etc. Additional information on the University Policy on Academic Honesty is at <https://d7admin.unh.edu/student-life/09-academic-honesty-2017>. Please be sure that you read and understand these.

Students with Disabilities: According to the Americans with Disabilities Act (as amended, 2008), each student with a disability has the right to request services from UNH to accommodate his/her disability. If you are a student with a documented disability or believe you may have a disability that requires accommodations, please contact Student Accessibility Services (SAS) at 201 Smith Hall. Accommodation letters are created by SAS with the student. If you have received Accommodation Letters for this course, please provide me with that information privately, in my office, so that we can review those accommodations.

Your academic success in this course is very important to me. If, during the semester, you find emotional or mental health issues are affecting that success, please contact Psychological and Counseling Services (PACS) (3rd fl, Smith Hall; 603 862-2090/TTY: 7-1-1) which provides counseling appointments and other mental health services. The University of New Hampshire and its faculty are committed to assuring a safe and productive educational environment for all students and for the university as a whole. To this end, the university requires faculty members to report to the university's Title IX Coordinator (Donna Marie Sorrentino, dms@unh.edu, 603-862-2930/1527 TTY) any incidents of sexual violence and harassment shared by students. If you wish to speak to a confidential support service provider who does not have this reporting responsibility because their discussions with clients are subject to legal privilege, you can find a list of resources here (<https://www.unh.edu/affirmativeaction/offices-resources-support>). For more information about what happens when you report, how the university considers your requests for confidentiality once a report is made to the Title IX Coordinator, your rights and report options at UNH (including anonymous report options) please visit (<https://www.unh.edu/affirmativeaction/reporting-students>).