Syllabus for Geometrical and Physical Optics, PHYS 462
Spring 2017

CRN: 34479, F01

MWF 11:45-12:45, REIC 207 (Lecture)
R 8:30-11:30 AM, REIC 113 (Laboratory)

Instructor: Ataur R. Chowdhury

Office: REIC 118

Office Hours: MWF 9:00-10:00 AM
TR 3:30-4:30 PM

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Prerequisites: PHYS 213X; PHYS 301; or permission of instructor**.**

Text: **Required:** *Optics* by Eugene Hecht, 5th Edition, Addison Wesley.

Reference Texts: 1. *Modern Optics* by R. Guenther, Wiley.
2. Statistical Optics by J. Goodman, Wiley.

Course Objectives: To acquire a basic understanding of the fundamentals of geometrical and physical optics.

Student Learning Outcomes:
1. Students should be able to understand the logistics of geometrical and physical optics.
2. Students should be able to set up equations for relevant optical phenomena and be able to solve for relevant quantities of interest.
3. Students should be able to simulate approximate optical properties where analytical solutions are not possible.
4. Students should understand the fundamentals of most geometrical and physical phenomena in optics.

Course Outline: (1) Propagation of light; (2) geometrical interpretation of optical phenomena; (3) Polarization of light; (4) Interference of light; (5) Diffraction of light; (6) Fourier and non-linear optics; and (7) Coherence theory.

Credits: 4 credits: 3 hr. of lecture, and 3hr. of lab per week.

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Course Requirements/ Policies:

Class Attedence/Participation:
For a better understanding of the course material attendance and participation in classroom activities are very important. This particular course is generally regarded as one of the founding courses that deal with the fundamentals of both geometrical and physical optics, and it is highly expected that the students will commit themselves to attend the class regularly. There will be supplemental materials for this course and the students will be held responsible for all the materials that will be brought in from outside the text. The students will be expected to participate in class activities, and take part in meaningful discussion and ask questions to better comprehend the subject material. 5% of your total grade is designated for the participation.

Homework:
On the average, 6-8 problems/exercises/questions will be assigned each week on Fridays. The homework will be due back at the beginning of class the following Friday. NO LATE HOMEWORK WILL BE ACCEPTED. NO EXCEPTIONS (barring emergencies and extreme situations). Group work is highly encouraged for solving problems, and for additional help with the homework the students are most welcome to consult the instructor during the office hour or any other time by prior appointment. Any homework you submit should reflect you own best effort. Copying of homework is absolutely not acceptable and will result in a grade of zero for the assignment.

Examinations:
There will be two midterm examinations (March 10, Friday, 11:45-12:45 and April 14, Friday 11:45-12:45) and a final comprehensive examination (May 5, Friday, 10:15-12:15 PM) for this course. Examinations will consist of, in most part, problems similar to those in the homework and those worked out in class. Midterms will cover the material covered in class and homework prior to the date of test, and the final will be comprehensive and will include material covered during the entire semester.

Laboratory:
The laboratory is an integral part of this course, and each student must register for and attend the lab section and perform all labs. All labs and reports must be completed. Every effort must be made to make up a lab during the same week if possible. Lab reports must be turned in on time, any lab turned in late will get deducted 20% for each week after the date it is due. A PASSING GRADE IN THE LAB IS REQUIRED TO PASS THE COURSE. A list of the labs and the lab policy will be provided in class and will be posted on the blackboard.

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Grading Policy:

Homework	20%
Participation	5%
Lab	20%
Midterm I	15%
Midterm II	15%
Final	25%
Total	100%

The final grading for this course will be based on a curve, the average of which is usually taken to be the break-point of letter grade B and C, and the standard deviation of the grade point distribution will separate subsequent letter grades. For a given score, your letter grade will not likely be lower than what it would be expected based on standard grading scale (9-100 = A, etc.). No plus-minus letter grades will be given for this course.

Academic Honesty

UAF expects and requires academic honesty from all members of the University community, and takes any act of plagiarism and cheating seriously. It is expected that all assignments, including homework and reports, that are turned in for this course must the original work of the individual student. Failure to comply with this policy will result in penalty as stipulated under UAF regulations.

Disabilities Services

The UAF Office of Disability Services implements the Americas with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. Any student who may need assistance with disabilities, should feel free to contact the instructor or directly to the Office of Disabilities Services (208 WHIT) by calling 907- 474-5655, or through email: uaf-disability-service@alaska.edu.