Ataur R. Chowdhury

REIC 118

MW 3:30-5:00 PM

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PHYS 213X; PHYS 301; or permission of instructor

by Eugene Hecht, 5th Edition, Addison Wesley.

1. by R. Guenther, Wiley.
2. Statistical Optics by J. Goodman, Wiley.

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

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 be to master the fundamentals of most geometrical and physical phenomena in optics.

(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.

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

Class Attednence/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	25%
Participation	5%
Lab	20%
Midterm	20%
Final	30%
Total	100%

Student Academic Support

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Student Resources:

- ɵ
- ɵ [6 free counseling sessions]
- ɵ
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Nondiscrimination statement

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22		
25	interference of light	9.1-9.2
27	wavefront-splitting spectrometer	9.3
29	amplitude-splitting spectrometers	9.4
Apr 1	multiple-beam interferometers	9.6
3	applications of interferometry	9.8
5	diffraction of light	10.1
8	Fraunhofer diffraction	10.2
10	Fraunhofer diffraction continued	10.2
12	Fresnel diffraction	10.3
15	Fresnel diffraction continued	10.3
17	Fourier optics, introduction	11.1
19	Fourier transforms	11.2
22	optical applications	11.3
24	coherence theory, introduction	12.1
26	fringes and coherence, visibility	12.2
29	visibility	12.3
May 3	1:00 PM-3:00 PM, Friday, REIC 165	