

Astronomy 80B: Light

5 units, satisfies quantitative req Q and T2
Spring 2003

Time: 10:00-11:45 Tu and Th
 Place: Thimann 1 (capacity ~ 100)
 Professor: Jerry Nelson
 office: 215 Center for Adaptive Optics (below Nat Sci 2)
 phone: 459-5132
 email: jnelson@ucolick.org
 web page: <http://www.ucolick.org/~jnelson/ay80b/index.html>
 office hours: 9-10:30am Wednesday
 TA: Stefan Meyer
 office: ISB 292
 phone: 459-5691
 email: sm98@physics.ucsc.edu
 office hour: 10-12am Tuesday
 discussion section: 5-6pm Tuesday, 356 ISB
 3-4pm Wednesday, 165 ISB

No.	Date	Subject	Reading	homework due
1	1 April	Fundamental properties of light	Ch 1, Ap A, I	
2	3 April	waves, light sources, reflection	Ch 2, Ap B	
3	8 April	reflection, refraction		
4	10 April	more refraction		#1 set
5	15 April	QUIZ #1 , mirages		
6	17 April	dispersion, mirrors and lenses	Ch 3, Ap C, D. E. F	#2 set
7	22 April	atmospheric effects, rainbows, etc		
8	24 April	photography and cameras	Ch 4	#3 set
9	29 April	photography and cameras		
10	1 May	QUIZ #2 , human eye and vision	Ch 5	#4 set
11	6 May	vision, optical instruments	Ch 6	
12	8 May	optical instruments		#5 set
13	13 May	students read draft papers		
14	15 May	field trip		#6 set
15	20 May	vision, depth perception	Ch 8	
16	22 May	QUIZ #3 , color	Ch 9	#7 set
17	27 May	color		
18	29 May	waves, light sources, lasers	Ch 15,	#8 set
19	3 June	waves, photons		
20	5 June	wave optics	Ch 12, App K	#9 set
	11 June	final exam, 4-7pm		

Text: Seeing the Light: Optics in nature, Photography, Color, Vision and Holography
by Falk, Brill, Stork

Tools: You will need a ruler and straightedge for this class and graph paper or quadrille paper is recommended for homework

Grading: 30% homework, 25% quizzes (45 minutes each), 25% final exam, 10% paper, 10% instructor and TA opinion. In addition, student must attend at least 5 sections in order to pass.

Homework: homework every week, due at start of class on Thursday, typically 10 problems, only a random subset of each assignment will be graded.

Paper: A paper will be required during the course. The topic will be some optical phenomenon (natural or manmade) selected by the student. The aim is to learn to make accurate and insightful observations, report them clearly, and to explain them in light of what you have learned in the class. A first draft of the paper will be submitted and comments will be returned to you, and a final draft will then be submitted. Paper length should be 500-1000 words and should include figures to explain what was seen and why. A list of example topics will be given out and a "typical" paper will be available as a style guide.

Field trip: options:

Visit to controlled laser fusion facility at LLNL and adaptive optics facility. We will go in vans or carpool. The trip will take most of the day. Alternate is to visit Lick Observatory and see and use a large telescope