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112-02A Our Universe- Color and Images

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Our Universe: Color and Images Fall Weekend 2013

PHYS 112-02A
8 – 12, Lindner 101

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Mailboxes in: Physics Dept. Office, Lindner
Weekend Office, Alter

Text: Seeing the Light, Falk, Brill and Stork

Grade: There will be two tests (100 points each) and a photo project (50 points) giving a total of 250 points for the lecture portion of the class. Your grade will be determined using the following scale:

240-250	A		180-194	C+		125-132	D-
233-239	A-		165-179	C		<125	F
220-232	B+		150-164	C-			
208-219	B		143-149	D+			
195-207	B-		133-142	D			

Schedule

Date	Topic	Lab/Test	
18 Aug	Introduction to Assignments (12 – 2)		
24	Chapters 1, 2	Reflection	
31	Chapters 2, 3	Refraction	
7 Sep	Chapter 3	Lenses	
14	Chapter 4	Test 1	
21	Chapter 5, 6, 8	Eye	
28	Chapter 9,10	Telescope	
5 Oct	Chapters 12, 13,	Mirror	
12	Optical Phenomena in Nature	Test 2 Lab Final	Photo Project due Home Labs due

Photo Project

You will do a photography project using either a single use camera provided by the instructor or your own camera if you prefer. The following list shows the required photographs:

1. Self portrait in a mirror with a visible card with your name clearly printed on it. Your name should be clear and readable and your face should be clear. Do not use a flash.
2. Two examples of reflection off a surface.
3. One example of refraction of light.
4. Two photos of moving objects. Try to take pictures of objects that are moving very fast relative to the camera.
5. One photo with the camera moving.
6. One photo of a close up TV screen, TV on, flash off.
7. One photo of something moving quickly in front of a TV screen. The TV should be on and be the only source of light. No flash.
8. One silhouette photo where the subject is back lighted.
9. Two photos of shadows on a white surface taken on a sunny day.
10. One “trick” photo.
11. Four photos that demonstrate some optical science principles or some interesting optical phenomena. These may include extras of any of the above subjects.

17 photos in all.

The project is to be done in the following format:

Introduction: this should be an overview of the project.

Photos: These should be mounted in the order given above. Include with each a description of what the photo shows and the conditions under which it was taken.

You may use photos that you have that were taken before this class.

Lab PHYS 113-03A

We will have 6 labs. There will be no labs on test days.

Each lab will be completed during the lab session.

Each lab will be worth 10 points. **The lowest lab grade will be dropped.**

There will also be 7 home labs. The first home lab is worth 10 points.

Each of the other home labs is worth 5 points.

Finally, there will be a lab final worth 30 points.

Your lab grade will be determined using the following scale:

115-120	A		86-93	C+		60-63	D-
112-114	A-		79-85	C		<60	F
106-111	B+		72-78	C-			
100-105	B		68-71	D+			
94-99	B-		64-67	D			

Home Labs

You will do 7 activities involving optics. For each one, write a detailed paragraph or two describing your observations and what it is that the activity is trying to show. Sketches will often be useful. The activities are:

1. First TRY IT on page 82. I will provide a copy of the grid. I also have a cylindrical mirror so we can see your result.
2. First TRY IT on page 88. You will need a magnifying glass. A cheap plastic one will do.
3. TRY IT on page 98. You may do either the clear glass and candle or the cup with coffee or tea.
4. TRY IT on page 208.
5. TRY IT on page 243. Also use plate 10.5.
6. First TRY IT on page 258. You will need a magnifying glass.
7. Compare and contrast the appearance of different colors under very dim light. Which colors, if any, can you distinguish? Include red, yellow, green and blue among your colors.

Lab Final

You are expected to know what each lab was about, what you were trying to accomplish, how you obtained your results, and what the results meant. The home labs may be included. For the lab final, you will have to apply what you have learned.

Grading Policy

I follow the Department of Physics grading policy, which is accessible at:

www.xavier.edu/physics/About-the-Department.cfm

I interpret the grading policy to mean C is an average grade. Therefore, those students with point totals around the class average would get C. Historically, most students in this class get B or C. Each class is different, but in any case bear in mind that A is an exceptional grade that I will only give for very outstanding work in lecture or lab.

Please note that hard work is not synonymous with A.

I am unable to give an incomplete. At the end of the term I will determine your grade based on the work I have. I cannot take any work after the end of the term.