General Information (Preliminary)

PHYS 107: Light, Perception, Photography & Visual Phenomena Laboratory

Spring 2020

Instructor : Dr. Anwar Bhatti
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Class Schedule

All Sections meet in Room 3214 of the John Toll Physics Building.

Section 101: Monday 3:00 pm – 4:50 pm
Section 301: Tuesday 1:00 pm – 2:50 pm

Teaching Assistant: Hadi Vafaei
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Required Text

Physics 107 Laboratory Instruction Sheets & Manual
You will have to purchase electronic access to the Lab manual.
More details are provided below.

You will have to submit your lab reports on paper.
It is advisable to prepare a lab response template in advance, including listing the questions you must answer as part of the lab report.

Course Overview: PHYS 107 LIGHT, PERCEPTION, PHOTOGRAPHY & VISUAL PHENOMENA LABORATORY is a one (1) credit hour course that must be taken concurrently with PHYSICS 106 LIGHT, PERCEPTION, PHOTOGRAPHY & VISUAL PHENOMENA , and may not be taken for credit by Physics Majors. The lab meets for two hours weekly, giving students hands-on in-depth experience with some of the topics covered in the Physics 106 lecture class.

The lab is a **participatory** activity, it is **mandatory** that you attend all labs. It is also important that you prepare for your lab period by carefully reading the lab instruction sheets and doing the pre-lab questions. Pre-lab questions serve both as a review of important ideas and preparation for lab activities. If you do not do the pre-lab questions online before you come to the lab, you will not receive credit for them. If you do not understand the questions or have difficulty completing the assignment you may ask for clarification.

Lab reports are completed in the lab and submitted at the end of class.

The questions that you must answer are embedded in the text in the Lab Manual that describes how the lab is to be done. Each of your answers must be self-contained. It should not be necessary for the TA to refer to the Lab Manual on order to determine the question you are answering. A simple yes or no answer by itself is never enough to receive full credit. The text is broken up in topics – T1, T2, T3, etc. Be very careful as you read the Lab Manual that you find all the questions, and that you answer them completely. Please include the experiment number, date, your own name and the name of your lab partner, your section number on your lab report. Write a brief summary of your work and your conclusions as the final section of your lab report.

You will carry out the lab with one or more lab partners. Discussion and cooperation with other students while doing the labs is encouraged. However, entry of observations and conclusions in the Lab Report should be done by each student independently. Pre-lab questions should also be answered independently in the final instance.

You will do each lab only once. **Additional credit** will **not** be given for repeating a lab

If you **miss a lab**, your absence must be for a valid reason known as an excused absence. Please consult the following University website about missed classes:

http://www.ugst.umd.edu/courserelatedpolicies.html

If your absence is an excused absence you will be permitted to make up the missed lab without any loss of credit. You are encouraged to make up the missed lab by attending another lab session that week (at the discretion of the instructor) (see the lab schedule below). You may also make up the missed lab(s) by attending one or more of the lab sessions during make-up week as designated in the lab schedule. However, you shall get only half credit for any make-up labs which you missed during your regular lab sessions for unacceptable excuses. If you have to miss labs for religious reasons, you are encouraged

to arrange for a make-up session before you miss the lab.

Grading will be based on the total point accumulation for the 11 labs, each lab being weighted equally. A histogram of total scores will be made, and a letter grade will be assigned approximately as follows from this distribution:

Top 20% - A; Next 40% - B; Next 30% - C; and the Bottom 10% - D or F

To qualify for an A, you must distinguish yourself among your peers. All these grade assignments are nominal and are based on previous experience of student participation in the course. In the unexpected circumstance that all students complete the labs with reasonable grades, failing letter grades will not be given.

It is mandatory to do all labs. Missing one lab will lower your grade by one letter grade; missing two labs will result in a D grade and missing more than two labs will result in a grade of F. If you miss a lab for any reason you must make it up as explained previously if you do not want to be penalized in the manner just described. Credit for make-up labs will be given as explained previously.

Lab Manual: You must purchase electronic access to the Experimental Instructions set. Access is available at www.theexpertta.com . You can access each of the section information by following the links below for the appropriate section

Section	Class Registration URL	TA Codes
0101	http://goeta.link/USH22MD-48B168-1YN	
0103	http://goeta.link/USH22MD-61128E-1YM	

Make sure you purchase the access code for the section in which you have registered.

Access to theexpertta can also be purchased at the University bookstore in the student union for somewhat more than at the website price.

Preparation for Lab #1: (a) Obtain your lab instruction from theexpertta, (b) Read the Introduction and the Lab #1 write-up and come prepared to ask questions if you do not understand the material, (c) Answer the pre-lab questions on the first page of the Lab Report (Data Sheet) for Lab #1 before coming to the class

Schedule of Experiments:

The order of the labs may be different from that in the lab manual to try to match more closely the material of the lecture course. The labs can be carried out independently of your lecture course if necessary.

Wk	Week of	Expt #	Experiment Title
1	Jan 27	- -	No Labs This Week
2	Feb 3	1	Camera Obscura
3	Feb 10	2	Pinhole Camera
4	Feb 17	3	Light Reflection, Mirrors and Images
5	Feb 24	4	Light Refraction
6	Mar 2	5	Images, Shaped Surfaces, Simple Lenses
7	Mar 9	1 - 5	Make up Labs
8	Mar 16	- -	Spring Break – No Labs
9	Mar 23	6	More Simple Lenses
10	Mar 30	7	The Digital Single Lens Reflex Camera
11	Apr 6	8	Polarized Light and Birefringence
12	Apr 13	9	Light: Interference
13	Apr 20	10	Light: Diffraction
14	Apr 27	11	Diffraction Gratings, Color and Holography
15	May 4	6 - 11	Make-Up Labs
16	May 11	- -	No Labs This Week
16	May 12	- -	Last Day of Classes
16	May 13	- -	Reading Day
16,17	May 14 - 20	- -	Final Exams

Lab Reports:

- **Every student must turn in their own lab report at the end of each lab class**

  Your lab reports should be brief and include:

  1. Your name, the experiment number, and the name of the experiment
  2. Your lab partner's name
  3. The date
  4. A two or three sentence summary of the experiment
  5. The data you collected
  6. Any analysis, plots or sketches
  7. Answers to all the questions

  Typically, you will work with a lab partner to collect data, so that two people will typically share the same data set. Groups of more than 2 are not allowed. You are encouraged to discuss your results and analysis with other students in the lab, but each student needs to perform their own analysis, answer the questions, and write up and submit their own report. You will need to bring your own paper on which to write up the lab.

- **At the end of each lab period, each student must turn in their own lab report.** The lab manual contains instructions for each lab and also has a series of questions that you are supposed to answer as you work through the lab. Your lab report should answer these questions using full sentences and your answers should be self-contained. It should not be necessary for the grader to refer to the lab manual in order to determine what it is you are trying to answer or explain. Answering a question with just a number or just "yes" or "no" is never enough to receive full credit. Use proper grammar and spelling. Be careful. As you read the lab, make sure that you find all the questions, and that you answer them fully, completely, and neatly.
- **Every student must turn in their own Lab Report at the end of each lab class.** Does it seem like we are repeating ourselves?

It is required that you personally hand your report to your instructor before leaving the classroom - no one else is allowed to turn in your report for you. Make sure that your instructor checks off your name so that in the unlikely event that your report is misplaced, we have a record that you turned it in. Late lab reports will not be accepted under any circumstances.

You must finish all 11 labs and hand in the corresponding reports to successfully complete the course for full credit. Missing Lab reports will be assigned a grade of "0" points. No additional credit is assigned for doing the same Lab more than once.

In case of Bad weather: Winter in the Washington Metro area can bring large snowstorms that make travel dangerous. Should this happen and the University is closed as a result on a day of a scheduled lab, class will be cancelled, and we will reschedule the lab. Note that the entire schedule of classes may slip by a week in the case of snow days. University Closing is announced over local radio and TV as well as on the University's homepage.

Academic Integrity : "The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism." For more information on the Code of Academic Integrity or the Student Honor Council, please visit https://tltc.umd.edu/plagiarism-and-honor-code and https://www.president.umd.edu/sites/president.umd.edu/files/files/documents/policies/V-100B.pdf