Syllabus: Physics 142, Summer I 2009 June 1 – July 12

PHYS142 Principles of Physics; (4 credits) Grade Method: REG/P-F/AUD. CORE Physical Science Lab (PL) Course.

Prerequisite: PHYS141 or equivalent. Credit will be granted for only one of the following: PHYS142, PHYS260 and PHYS261 (formerly: PHYS262) or PHYS272. A continuation of PHYS141 covering waves, electricity and magnetism, optics and modern physics.
0181(19599) G. Jenkins Meets 06/01/09-07/12/09
MTuWThF... 5:30pm- 6:50pm (PHY 4208)
TuTh..... 7:00pm- 9:00pm (PHY 3310) Lab
MW...... 7:00pm- 7:50pm (PHY 4208) Dis

Instructor: Greg Jenkins, <u>hsgsj@umd.edu</u> Office: Physics 2304, (301) 405-7278 **TA:** Matt Severson, <u>mserveso@umd.edu</u> Office: Physics 0104, (301) 405-8577

About the course

Physics 142, the second of a two-semester series in general physics, covers the fields of electricity, magnetism, simple circuits, optics, and modern physics.

Required Texts

<u>Text:</u> Raymond E. Serway, and John W. Jewett. *Physics for Scientists and Engineers, Vol 2*, 7th edition. ISBN 978-0-4-9511244-0

There are several Serway physics books, so make sure that you buy the right one! Lab Manual: Physics 142 Laboratory Manual (UMCP)

Both texts are available at the University Book Store and the Maryland Book Exchange.

Course Website

http://www.physics.umd.edu/courses/Phys142 and click on our class under Summer 2009

The schedule should be checked often since it will be updated as the semester progresses. The comprehensive schedule allows you to budget your time and know what to read to prepare for class, provides a list of due dates for homework sets, and shows all scheduled quizzes and exams. The homework assignements will be posted and updated as well.

Lectures and Discussion

Students are required to attend lectures and discussion, where homework assignments will be given and collected, exams and quizes will be announced and administered, and the course material will be presented. Lectures will consist of summary presentations and chalkboard calculations with constant student participation. Note that not all material will be directly covered in lectures. Students are responsible for reading and understanding all material in assigned chapters, whether or not this material is explicitly treated in the lectures.

Grading

There will be one mid-term exam, one final exam, 11 homework assignments, 10 quizzes, and 11 laboratory reports. Two of your lowest quiz scores and one of your lowest homework grades will be dropped. Your final grade will be based on the following weightings:

Mid-term exam	20%
Final Exam	30%
Quizzes	15%
(best 8 out of 10)	1.5 %
Laboratory	20%
Homework sets	150/
(best 10 out of 11)	1 J 70

Homework

The best way to learn physics is to work through many problems. However, it is not feasible to grade each and every problem in detail. Hence, we will select and grade in detail two problems from every homework. Each of the two problems are worth 5 points each. The rest of the problems are graded with either a 1 or 0. An *almost correct* solution gets 1 point.

Homework assignments are due at the *beginning of lecture*. No homework grade will be dropped and no late homework will be accepted unless accompanied by written documentation of a University-recognized excuse (documented illness, documented family emergency, religious observances, participation in the University activity at the request of a University official).

Guidelines for homework assignments:

- All homework assignments should be neatly written with answers to questions presented in numerical order. Make sure that you attempt problems starting at the top of the sheet proceeding downward. Have enough empty space between one problem and the next.
- WRITE YOUR NAME CLEARLY AT THE TOP OF EACH PAGE AND STAPLE ALL PAGES TOGETHER: The TA will NOT grade any homework that does not meet this criterion (zero points).
- Be sure to answer all parts of each question.
- Your problems must contain words and explanations for your steps. THIS IS A MUST.
- When answering the "questions", please use complete sentences. If the question is a true/false, a multiple choice, yes/no, or other similar question, explain why the answer you chose is the correct one.
- Any answer must be explained with physical principles or concepts. A SIMPLE YES OR NO WILL NEVER DO.
- If you can draw a diagram or a picture of the situation, then you must draw it.
- Your TA will deduct points if your answer is hard to understand because of poor grammar.
- All answers must have units.
- To get full credit, you must show all your work!!
- All answers must have units.

• *Late homework is accepted only in exceptional circumstances.* If you are allowed to turn in late homework, it will be graded for 15% less credit for every day that it is late. Once the solutions are posted, no late homework will be accepted.

Quizzes

Ten 10-minute quizzes will be conducted through-out the course of the semester administered by the TA. It will be given at the beginning of the Discussion section on the same day the homework set is due. If you understood the homework problems, you should have no problem with the quiz. The best 8 will be counted towards your final grade. There will be no make-up quizes. Please refer to the website for the exact schedule.

Exams

All exams are closed book. A single 4x6 index card will be allowed for the first exam, and two 4x6 cards will be allowed for the final exam. No calculators with memory or wireless communication are allowed. If you bring a such a calculator to an exam, you will not be allowed to use it. The exams will be the full duration of the alotted time of the lecture, 1 hour and 20 minutes. The exam will include numerical constants you may need. Make-up exams will only be given under extraordinary circumstances, in which case an oral examination will be conducted.

Laboratory

Check the schedule on-line. Please note that I moved the "equipotential lab" to the 4th scheduled lab, a departure from the lab manual.

Please keep the following in mind.

- Students *have to complete ALL* the laboratories and turn in *all* the lab reports *to be eligible* for a passing grade in the course. There is one make-up lab at the end of the semester. However, you cannot make up more than one lab. If you miss more than 1 lab, the grade is an *automatic F by non-negotiable DEPARTMENT RULES*.
- Please read the complete experiment in the lab manual and complete all the questions listed in the "prelab." The prelab questions are due at the *beginning* of the lab.
- The lab report is due at the end of the lab. You will not be given extra time to turn in the report. So, it is a good idea to prepare for the lab by making all the necessary tables before coming to the lab and bringing the necessary supplies (pencil, ruler, graph sheets etc) with you. If you are confused about something in the manual, please send your TA an email.

Rescheduling of lectures, discussions, &/or lab hours

In the case of unforseen circumstances, lab, discussion, and lecture hours may be rescheduled. Any rescheduling will be decided during the semester as possible extenuating circumstances arise.

Attendance

A 4 credit complete Physics course is extremely fast paced and demanding. You will be learning new concepts every lecture and missing even one lecture can make you fall behind simply because the concepts build on the ones covered in earlier sessions. Hence, attendance (lectures,

discussions, and labs) is mandatory. We will have some exams and quizzes during lecture period and some during discussion period (specific announcements later). Please refer to the website for any changes.

Getting help: Office hours

If there is ever anything that you do not understand, get help immediately! Do not fall behind because you were afraid to ask questions. You have many options available: you may ask me during or immediately following class, ask your TA in lab or discussion, or set up an appointment. *Please check the website for the current office hours of the instructor and TA*. We also encourage you to draw on the strengths of others in this class to learn the material by forming study groups—however, plagiarizing will not be tolerated.

Academic Honesty

Along with certain rights, students also have the responsibility to behave honorably in an academic environment. Academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism will not be tolerated. Any abridgement of academic integrity standards will be referred directly to the Assistant Dean and forwarded to the University's Office of Judicial Affairs. Confirmation of such incidents can result in expulsion from the University. Students who are uncertain as to what constitutes academic dishonesty should consult the University publication entitled Academic Dishonesty. Of course, you must work by yourself on exams and quizzes. You are allowed to work with other students, the physics clinic, your TA and your instructor on your homework and on the labs. However, you should not just directly copy from them. Doing so is not only dishonest, it will hurt your ability to do the problems on the quizzes and the exams. You should also be aware of the University of Maryland Honor Pledge, found at http://www.inform.umd.edu/honorpledge.

The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments not specifically exempted by the instructor. The Pledge reads:

"I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."

The pledge was adopted by the University Senate on April 9, 2001, and approved by the President on May 10, 2001. Full implementation is effective throughout the University on the first day of the Spring 2002 semester.

Holiday Schedule:

There is only one holiday scheduled during the semester (Independence Day Holiday observed on July 3, 2009). There will be no class on Friday, July 3rd.

Week #	Date	Day	Chapter	Topics	Exams and Quizzes	Lab and Discussion	Hw # due
1	1-Jun	Monday	Intro, Appendices A and B, 23	Electric fields			
	2-Jun	Tuesday	23	Electric fields		Electrostatics	
	3-Jun	Wednesday	23	Electric fields	Quiz #1	Recitation	
	4-Jun	Thursday	24	Guass's law		Light bulbs	1
	5-Jun	Friday	24	Guass's law			
2	8-Jun	Monday	25	Electric Potential	Quiz #2	Recitation	2
	9-Jun	Tuesday	25	Electric Potential		Resistance	
	10- Jun	Wednesday	26	Capacitance and Dielectrics	Quiz #3	Recitation	3
	11- Jun	Thursday	26	Capacitance and Dielectrics		Equipotentials and Fields.	
	12- Jun	Friday	27, 28	Current and Resistance			
3	15- Jun	Monday	28	DC circuits	Quiz #4	Recitation	4
	16- Jun	Tuesday	29	Magnetic fields		Ohms Law	
	17- Jun	Wednesday	29	Magnetic fields	Quiz #5	Recitation	5
	18- Jun	Thursday	29,30	Magnetic fields		Magnetic Field	
	19- Jun	Friday			Exam		
4	22- Jun	Monday	30,31	Faraday's Law	Quiz #6	Recitation	6
	23- Jun	Tuesday	31	Faraday's Law		The Oscilloscope	
	24- Jun	Wednesday	31	Faraday's Law	Quiz #7	Recitation	7

--- schedule is subject to change as the semester progresses ---

	25- Jun	Thursday	32	Inductance		RC and RL Circuits	
	26- Jun	Friday	34	E&M Waves			
5	29- Jun	Monday	34	E&M Waves	Quiz #8	Recitation	8
	30- Jun	Tuesday	35	Geometric optics		Faradays Law	
	1-Jul	Wednesday	35,36	Imaging	Quiz #9	Recitation	9
	2-Jul	Thursday	36	Imaging		Diffraction	
	3-Jul	Friday					
6	6-Jul	Monday	37	Interference of Light Waves	Quiz #10	Recitation	10
	7-Jul	Tuesday	37,38	Diffraction and Polarization		Photoelectric Effect	
	8-Jul	Wednesday	37,38	Diffraction and Polarization		Recitation	
	9-Jul	Thursday	38	Diffraction and Polarization		Make-up lab	11
	10-Jul	Friday			Final Exam		

#

All homework due dates are posted on the <u>schedule</u>.

Homework #	Questions and Problems
1	Questions: Q23.12, Q23.14 Problems: 23.7, 23.8, 23.10, 23.12, 23.17, 23.27, 23.30, 23.34, 23.35, 23.36, 23.37, 23.39, 23.49, 23.56

#