

PHYSICS 142: FUNDAMENTALS OF PHYSICS (4 CREDITS)

Summer II 2008 July 14 – Aug 22

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Course Website: www.physics.umd.edu/courses/Phys142/giridhar/summer08/home142.html
or you could go to www.physics.umd.edu/courses/Phys142 and click on our class under Summer 2008.

Timings

Lectures ALL DAYS: 5.30 pm- 6.50 pm Physics 1402

Discussions and Labs: There are two sections in this course that meet at the following times

	Discussion (Room 1402)	Lab (Room 3314)
Section 0281	MW: 7.00 pm-7.50 pm	Tu, Thu: 7.00pm-9.00 pm
Section 0282	Tu Thu: 7.00 pm-7.50 pm	M W: 7.00pm-9.00 pm

About the course

Welcome to PHYS 142! This course, the second of a two-semester series in general physics, covers the fields of waves, Electricity, magnetism, optics and modern physics.

Required Texts

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

Lab Manual: *Physics 142 Laboratory Manual (UMCP)*

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

Corequisites

MATH 141 or MATH 221 is a corequisite for this class. Knowledge of basic Algebra and geometry is assumed. We understand that due to the varied background that students come from, not everyone is equally equipped with the skills required. Hence, we will try to hone your skills by giving you specially designed exercises in these specific topics.

Course requirements

Course requirements serve three functions. First, and most importantly, they help you to learn the material. Second, they help us to better teach the material in lectures, discussions, and labs by providing feedback on what is well and not so well understood. Finally, they aid us in evaluation.

Grading

Your grades will be based upon the following components:

Mid term exams: (Best 2 out of 3; 14 % each)	28 %
Final Exam (May 20 7.00-8.50 pm)	22 %
Quizzes (best 4 out of 6)	10 %
Laboratory	20 %
Homework (The lowest 3 will be dropped)	20 %

Homework

Assigned Problems: The surest and best way to learn physics is to work through as many problems as possible. However, it is not feasible to grade each and every problem. Hence, we will select and grade in detail two problems from every homework; each of the two problems are worth 5 points each. These problems are marked in **bold red**. The rest of the problems are graded out of 2 points each. An *almost correct* solution gets 2 points, while a *good attempt* (right method with the correct equations, correct picture) gets 1 point.

Homework assignments are due at the *beginning of lecture*. No homework grades 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. Be sure that your name is clearly written at the top of all pages and that you have stapled all pages together. You are responsible for misplaced or lost pages. **The TA will NOT grade any homework that does not meet this criterion and you will get a 0 on that homework.**
- Be sure to answer all parts of each question.

Please follow the detailed instructions given in class on how to solve homework problems. Some them are also listed below.

- Make sure that you attempt problems starting at the top of the sheet proceeding downward. If you have the habit of solving problems with sequential steps proceeding horizontally, then you cannot have 2 problems next to each other (horizontally). If you are in the habit of having sequential steps below each other, then you can have more than one problem next to each other **ONLY IF** there is a clear partition between the two. These instructions are probably not very clear. *If you do not understand these instructions, please clarify with the instructor.*
- Have enough empty space between one problem and the next.
- Your problems must contain words and explanations for your steps. **THIS IS A MUST.**
- 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.
- All answers must have units.
- Each student is allowed to turn in homework late **ONLY 2** times during the semester. But these will be graded for 15 % less credit for every day that they are late.

Suggested Problems: Often, I may suggest work problems (from the student's solutions manual) that may help students to better understand some concepts. These problems are not due in class or will not be graded, although it would be extremely beneficial to work through them. These problems will be put up on the website. These problems are in *italics and green*.

Quizzes

Six 15-minute quizzes, consisting of 3 multiple choice questions and 1 problem, will be conducted through the course of the semester; the quiz problem will be similar to one of the homework problems. These quizzes will be right after discussion or lecture hours. The best 4 will be counted towards your final grade. The quizzes will be conducted at the end of discussion. The multiple choice questions will be based on the questions given at the end of each chapter and/or concepts discussed in the class. Please refer to the website for the dates.

Exams

There will be three closed book and closed note exams midterm exams and one final exam. You can drop one of the midterms. No makeup exams for any of the mid terms are allowed; if you miss one of the mid-term exams, it will count as your dropped exam. The exams will be of one hour duration and a mixture of conceptual (multiple choice questions) and work problems. The exact dates will be put up on the website.

Laboratory

The laboratory schedule is as follows.

Serial #	Expt # (in the manual)	Dates	Experiment
1	1	Mon, Tue 14, 15 July	Electrostatics
2	3	Wed, Thu 16, 17 July	Light bulbs
3	4	Mon, Tue 21, 22 July	Resistance
4	2	Wed, Thu 23, 24 July	Equipotentials and Fields.
5	5	Mon, Tue 28, 29 July	Ohm's Law
6	6	Wed, Thu 30, 31 July	Magnetic Field
7	7	Mon, Tue 4, 5 Aug	The Oscilloscope
		Wed, Thu 6, 7 Aug	No lab, lecture and exam instead
8	8	Mon, Tue 11,12 Aug	RC and RL Circuits
9	9	Wed, Thu 13,14 Aug	Faraday's Law
10	10	Mon, Tue 18, 10 Aug	Diffraction
Make up		Wed, Thu 20, 21 Aug	Make-up Labs (at most 2)

Please keep the following in mind.

1. Students **have to complete ALL** the laboratories and turn in **all** the lab reports **to be eligible** for a passing grade in the course. You will be given one opportunity to make up labs. However, you cannot make up more than one lab. If you miss more than 1 lab in each half of the semester, the grade is an *automatic F by non-negotiable DEPARTMENT RULES*.

2. 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.
3. 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 TAs an email. For some of the experiments (very few) your TA might allow you 1 extra day to turn the lab in.

Rescheduling of lectures, discussions, or lab hours

Some of the lab, discussion and lecture hours may have to be rescheduled. We will have some exams or quizzes during lecture period and some during discussion period (specific announcements later). Please refer to the website for any changes. *There will be a combined discussion on Aug 06 from 8.20 pm-9.10 pm and a lecture from 7.20 pm -8.20 pm. The exam on Aug 07 will be from 7.20 pm- 8.20 pm.*

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** and will be taken almost during every lecture* and discussion. Please send a note to me or the TA if you have a valid medical reason for not attending. Absence without permission/a valid reason or walking out of lectures/discussions will count towards *negative points*.

*Your name might be called out during the lecture at random and if you are absent during that lecture, then it is noted as an absence.

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. We view seeking help as a sign of your commitment to the course, and this will be considered when grading time comes around. You have many options available: you may ask me during or immediately following class, ask your TA in lab, or set up an appointment.

Please check the website for the current office hours of the instructor and TAs. 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.

Current office hours

	3.15 pm - 4.15 pm	4.15 pm – 5.15 pm
Monday	Damon (PHYS 3103B)	Giri (PHYS 3102)
Tuesday	Abraham (PHYS 3101)	
Wednesday	Damon (PHYS 3103B)	Giri (PHYS 3102)
Thursday	Abraham (PHYS 3101)	

Academic Honesty

Giving/receiving help on exams or plagiarizing homework and other assignments is not acceptable behavior in this class. Please refer to the student academic honor page www.shc.umd.edu for details. As mentioned earlier, you are allowed to discuss with your peers while attempting homework problems, but the work that you turn in must be your own. Any cases of suspected cheating will be immediately referred to the Honor Council; this is to protect your right to due process and a fair hearing.

Tentative schedule of topics and student responsibility

The table below contains the tentative list of topics that are going to be covered. The order in which the topics are covered will not exactly obey the order in which they are listed. The student is responsible for reading all the sections from the book listed below. Some topics could be added to this list and these will be announced in the lecture.

Week #	Date	Day	Chapter	Section
1	July 14	Monday	16	Introduction, 1, 2
	July 15	Tuesday	16, 17	3, 4, 5,6; 17.1, 17.2, 17.3, 17.4
	July 16	Wednesday	17,18	17.5; 18.1-18.5, 18.7
	July 17	Thursday	23	23.1-23.5
	July 18	Friday	23	23.1-23.5
2	July 21	Monday	24	24.1-24.4
	July 22	Tuesday	25	25.1-25.8
	July 23	Wednesday	25, 26	26.1-26.6
	July 24	Thursday	26	Exam I , 26.1-26.6
	July 25	Friday	26	26.1-26.6
3	July 28	Monday	27, 28	27.1-27.4, 28.1,28.2
	July 29	Tuesday	28	28.3-28.5
	July 30	Wednesday	29	29.1-29.5
	July 31	Thursday	29, 30	29.1-29.5
	Aug 01	Friday	30	30.1-30.4, 30.7
4	Aug 04	Monday	30, 31	30.7, 31.1-31.5
	Aug 05	Tuesday	31	31.1-31.5
	Aug 06	Wednesday	32	Exam II, 32.1-32.3
	Aug 07	Thursday	32	32.3-32.6, 33.1-33.9
	Aug 08	Friday	33	33.1-33.9
5	Aug 11	Monday	34	34.1-34.7
	Aug 12	Tuesday	35	35.1-35.8
	Aug 13	Wednesday	35	35.1-35.8, 36.1 -36.2
	Aug 14	Thursday	36	Exam III 36.3-36.4
	Aug 15	Friday	36	36.5-36.6
6	Aug 16	Monday	36,37	36.8, 37. 1
	Aug 17	Tuesday	37,38	37.1-37.7
	Aug 18	Wednesday	37,38	37.1-37.7, 38.1-38.2
	Aug 19	Thursday	38	38.3-38.6
	Aug 08	Friday		Final Exam