

Physics 122 – Fundamentals of Physics II

Syllabus for Fall 2014

Course description The second of a two-semester series in general physics. The course is a continuation of PHYS 121, and covers waves, electricity and magnetism, optics, and modern physics. This survey course, together with PHYS 121, generally satisfies the minimum requirement of medical and dental schools.

Pre-requisite PHYS 121 or similar or comparable course, or permission of the department. Students are expected to be comfortable and proficient in algebra and trigonometry.

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Office hours : Mon at 2-3 pm and Wed at 2-4 pm, also w/ appointment

Website <http://elms.umd.edu>
 The syllabus and schedule can be also found at:
<http://www.physics.umd.edu/courses/Phys122/index.html>

- Books**
- Knight, Jones, Field, *College Physics: A Strategic Approach*, 2nd edition
 - PHYSICS 122 Laboratory Manual, Fall 2008 edition

Section	Teaching Assistant	Time and place		
		0101	John Silk jjsilk@umd.edu	Lab
		Dis	Mon, 3-3:50	MTH 0405
		Office	TBD	TBD
0102	Luke Robertson luk2718@umd.edu	Lab	Tue, 10-11:50	PHY 3314
		Dis	Tue, 9-9:50	MTH 0405
		Office	TBD	TBD
0105	Joshua Isaacs jisaacs@umd.edu	Lab	Tue, 4-5:50	PHY 3314
		Dis	Thu, 4-4:50	PHY 1204
		Office	TBD	TBD

Lectures **Physics 1410, MWF 1:00 pm – 1:50 pm**

Students are required to attend lectures, where the course material will be presented and homework assignments and exams will be announced, given and collected. Lectures will consist of presentation slides, chalkboard calculations, live demonstrations and 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.

Lab You are required to complete a total of 9 laboratory assignments. Each week you will do the designated laboratory exercise, coordinated by your Teaching Assistant, and complete the assigned experiment. You should read the lab description beforehand. **For each lab, you must give your TA a completed “check sheet” and written answers to the questions at the end of the laboratory write-up.** Your lab grade will be based on these questions (maximum 20 points, equally divided into the number of questions). The TA will deduct points if your handwriting is illegible, or if your answer is hard to understand. If you cannot attend a session for an excusable reason, you may attend another section given the same week **with the permission of the Instructor**. Or you may attend a scheduled makeup session. In general, it will only be possible to perform a single experiment during the makeup session.

Discussion sections Discussion sections will be conducted by Teaching Assistants, and are a forum where students can ask questions about the course material and where problems will be worked with student participation.

Homework MasteringPhysics homework assignments will be given and posted on ELMS.

MasteringPhysics: MasteringPhysics is an online tutorial and homework which accompanies the textbook. To access Mastering Physics you need an access code. If you get the textbook from the Bookstore, it should come bundled with a “Student Access Kit”. If you bought a version of the textbook that didn’t come with an Access Kit, you can purchase an access code directly from the web site at www.masteringphysics.com. If you expect to purchase the textbook from the bookstore, you should not purchase an access code from the web site because then you will end up paying twice for MasteringPhysics.

Course ID: PHYS122KIM2014

Homework policy: Late homework is accepted only in exceptional circumstances (i.e. illness, a religious observance, or some other compelling reason). If you do not have a valid excuse, you can still turn in late homework with penalty.

Exams There will be **three** mid-term exams and **one** final exam. All exams are closed book. You will need a regular calculator with standard trigonometry functions. The exam sheets will contain any numerical constants that you will need. Exams must be taken on the scheduled days unless you have a valid excuse. Make-up exams will be given only under extraordinary circumstances if arrangements are made with the instructor ahead of time.

Grade The final grade will be based on the components below.

Homework	30%
Lab	20%
Mid-term exams* (best 2 out of 3)	30%
Final exam	20%

* The best two out of three mid-term exams will be used for the final grade *if and only if* all three are completed.

The final grade will be set at the end of the semester after all work is completed. The final grade will be determined by the University of Maryland grading policy, quoted below:

- A** excellent mastery of the subject and outstanding scholarship.
- B** good mastery of the subject and good scholarship.
- C** acceptable mastery of the subject and the usual achievement expected.
- D** borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree.
- F** failure to understand the subject and unsatisfactory performance.

Tutoring and Help Your instructor and TA have office hours, both scheduled and by appointment, and are happy to help you outside of class. Don't be shy! We really are happy to work with you!

In addition, the Physics Department has a free tutoring service, the Slawsky Clinic, run by a nice group of senior physicists. It is located in Room 1214 in the Physics building. You can get help at any time they are open, from 10 am until 3 pm, M-F. More information can be found at:

<http://umdphysics.umd.edu/academics/tutoring-a-academic-support/93-slawskyclinic.html>

Course Evaluation Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student member of our academic community. Your feedback is confidential and important to the improvement of teaching and learning at the University as well as to the tenure and promotion process. You can go to the CourseEvalUM website (www.courseevalum.umd.edu) to

evaluate the course.

University Closure In the event of a University Closure the department will do its best to accommodate students by scheduling make-up sessions.

Students with disabilities Students with disabilities should meet with the instructor at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs.

Academic Integrity You must work by yourself on exams and homework. You are allowed to work with other students, your TA and your instructor on your homework. However, you should not just directly copy from them. Doing so is not only dishonest, but will hurt your ability to do the problems on the exams.

Lab Schedule: Rm. 3314

0101 (M, 3-3:50 pm), 0102 (Tu, 10-11:50 pm), 0105 (Tu, 4-5:50 am)

Week	Dates	Experiment #	Experiment Title
1	Sep 1-2	No Lab	<i>No lab this week</i>
2	Sep 8-9	No Lab	<i>No lab this week</i>
3	Sep 15-16	1	Standing waves on a vibrating string
4	Sep 22-23	3	Equipotential surfaces
5	Sep 29-30	2	Digital oscilloscope
6	Oct 6-7	4	Electrical resistance
7	Oct 13-14	6	Charge-to-mass ratio of an electron
8	Oct 20-21	1,3,2,4,6	Make up
9	Oct 27-28	5	Magnetic force between currents
10	Nov 3-4	7	Electromagnetic induction
11	Nov 10-11	8	Ray optics
12	Nov 17-18	9	Double slit interference
13	Nov 24-25	No Lab	<i>Thanksgiving Holiday</i>
14	Dec 1-2	5,7,8,9	Make up
15	Dec 8-9	No Lab	No Lab / No exam

Lecture/Exam/Homework Schedule: Physics 1410, MWF 1:00 pm – 1:50 pm

Week	Dates	Lecture Topic	Homework due Wed 11:59 pm
1	Sep 3	Introduction; Oscillations (Ch 14)	
	Sep 5		
2	Sep 8	Traveling waves and sound (Ch 15)	
	Sep 10		HW1 (Ch 14)
	Sep 12	Superposition and standing waves (Ch 16)	
3	Sep 15		
	Sep 17	Electric fields and forces (Ch 20)	HW2 (Chs 15, 16)
	Sep 19		
4	Sep 22	Electric potential (Ch 21)	
	Sep 24		HW3 (Ch 20)
	Sep 26		
5	Sep 29	Review 1	
	Oct 1	Exam 1 (Chs 14, 15, 16, 20)	
	Oct 3	Electric potential (Ch 21)	
6	Oct 6	Current and resistance (Ch 22)	
	Oct 8		HW4 (Ch 21)
	Oct 10	Circuits (Ch 23)	
7	Oct 13		
	Oct 15		
	Oct 17	Magnetic fields and forces (Ch 24)	
8	Oct 20		
	Oct 22		HW5 (Chs 22, 23)
	Oct 24	EM induction and EM waves (Ch 25)	
9	Oct 27		
	Oct 29		HW6 (Ch 24)
	Oct 31	AC electricity (Ch 26)	
10	Nov 3	Review 2	
	Nov 5	Exam 2 (Chs 20, 21, 22, 23, 24)	
	Nov 7	Ray optics (Ch 18)	
11	Nov 10		
	Nov 12		HW7 (Chs 25, 26)
	Nov 14	Wave optics (Ch 17)	
12	Nov 17		
	Nov 19		
	Nov 21	Optical instruments (Ch 19)	
13	Nov 24		
	Nov 26	Quantum physics (Ch 28)	HW9 (Ch 17, 18)
	Nov 28	<i>Thanksgiving Holiday (No Lecture)</i>	
14	Dec 1	Review 3	
	Dec 3	Exam 3 (Chs 24, 25, 26, 17, 18)	
	Dec 5	Quantum physics (Ch 28)	
15	Dec 8	Relativity (Ch 27)	
	Dec 10	Review 4	
	Dec 12		
16	Dec 16	Final Exam (Chs 14-26)	