

# Physics 142 – Principles of Physics

## Syllabus for Fall 2011

**Course description** The second of a two-semester series in general physics. This survey course will use algebra, trigonometry, and calculus and is recommended for chemistry and zoology majors. It also satisfies the requirements of medical and dental schools. The course is a continuation of PHYS 141, and covers waves, electricity and magnetism, optics, and modern physics.

**Pre-requisite** PHYS 141 or equivalent. Students are expected to be comfortable and proficient in algebra, trigonometry, and calculus.

**Co-requisite** MATH 141 or MATH 221

**Instructor** Prof. Ki-Yong Kim  
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**Office hours** : Thu 2-3 pm and Fri 4-5 pm, also w/ appointment

**Website** <http://elms.umd.edu>

The syllabus and schedule can be also found at:  
<http://www.physics.umd.edu/courses/Phys142/index.html>

- Books**
- Giancoli, *Physics for Scientists and Engineers with Modern Physics*, (Volume 2), 4th edition.
  - PHYS142 Laboratory Manual (UMCP), second edition

- Credits**
- 4 credit hours
  - Credit will be granted for only one of: PHYS 142, PHYS 260 and PHYS 261, or PHYS 272.

Section	Teaching Assistant	Time and place		
		0101	Melissa Trepanier <a href="mailto:mctrep@umd.edu">mctrep@umd.edu</a>	Dis
		Lab	Thu, 4:00-5:50 pm	PHY 3314
		Office Hours	Mon noon-1:00 pm, Wed 11:00-noon	PHY3103B
0102	Melissa Trepanier <a href="mailto:mctrep@umd.edu">mctrep@umd.edu</a>	Dis	Thu, 11:00-11:50 am	CHE 2136
		Lab	Thu, 12:00-1:50 pm	PHY 3314
		Office Hours	Mon noon-1:00 pm, Wed 11:00-noon	PHY3103B

**Lectures**      **Physics 1201, MWF 3:00-3:50 pm**

Students are required to attend lectures, where the course material will be presented and homework assignments, quizzes, and exams will be announced, given and collected. Lectures will consist of introduction/summary 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 11 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 because of poor grammar. 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**      Homework assignments will be given each week in class and posted on ELMS, usually on Fridays, and will have to be turned in one week later at the beginning Friday’s lectures unless otherwise specified. The homework assignments will be graded by your TA.

**Guidelines for homework assignments:**

- Write down your name and section number clearly at the top of front page and staple all pages together.
- To get full credit, you must show all your work.
- 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.
- Your TA will deduct points if your answer is hard to understand because of poor grammar.
- Late homework is accepted only in exceptional circumstances. If you turn in your homework late, 2 points per day will be deducted from your score. Once the solutions are posted, no late homework will be accepted.

**Quizzes** There will be a 10 minute quiz weekly, usually given at the end of Monday's class, on the material covered in the homework turned in the previous Friday. The quizzes will start at 3:40 pm and will be collected at 3:50 pm. The quiz may be a traditional problem or a conceptual one. For grading, your two lowest quiz scores will be dropped. Makeup quizzes are not allowed. If you miss a quiz due to illness, that will be one of the quizzes to be dropped.

**Exams** There will be three 50-minute mid-term exams and one final exam. All exams are closed book. However, you may bring one 4 x 6 index card, with whatever you want written on it, to the first exam. You may bring the cards from the previous exams plus on additional card to each subsequent exam (i.e. 1 card for exam #1, 2 cards for exam #2, and 3 cards for exam #3). The exam will include problems and conceptual questions. You may bring and use a regular calculator but not laptops, PDA's or cell phones. The exam sheets will contain any numerical constants that you will need. 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	20%
Quizzes (best 8 out of 10)	10%
Lab Reports	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. The time reserved for PHYS 142 is 10-11 am and 12-1 pm Monday through Friday. However, you can usually get help at any time they are open, from 10 am until 3 pm. More information can be found at:

<http://umdphysics.umd.edu/index.php/academics/tutoring-a-academic-support.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. CourseEvalUM will be open for you to complete your evaluations for fall semester courses between Thursday, December 1 and Tuesday, December 13. You can go directly to the website ([www.courseevalum.umd.edu](http://www.courseevalum.umd.edu)) to complete your evaluations starting December 1. By completing all of your evaluations each semester, you will have the privilege of accessing the summary reports for thousands of courses online at Testudo.

**University Closure**

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

**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**

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, but 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 the 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.

**Lecture/Exam Schedule: Rm 1201, MWF 3:00 pm – 3:50 pm**  
(subject to change as the semester progresses)

<b>Week of</b>	<b>Topic</b>	<b>Chapter in Text</b>
Aug 29	Coulomb's Law	Chapter 21
Sep 5	Electric Fields,	Chapter 21
Sep 5, Mon	<i>Labor Day Holiday</i>	No Lecture
Sep 12	Gauss's Law	Chapter 22
Sep 19	Electric Potential	Chapter 23
Sep 26	Capacitance	Chapter 24
Sep 30, Fri	<b>Exam 1</b>	cumulative
Oct 3	Resistance	Chapter 25
Oct 10	DC circuits	Chapter 26
Oct 17	Magnetic Fields	Chapter 27
Oct 24	Magnetic Fields	Chapter 28
Oct 28, Fri	<b>Exam 2</b>	cumulative
Oct 31	Faraday's Law	Chapter 29
Nov 7	Inductance	Chapter 30
Nov 14	Electromagnetic Waves	Chapter 31, 32
Nov 21	Optics	Chapter 33, 34, 35
Nov 25, Fri	<i>Thanksgiving Holiday</i>	No Lecture
Nov 28	Relativity	Chapter 36
Nov 30, Wed	<b>Exam 3</b>	cumulative
Dec 5	Quantum Physics	Chapter 37, 38
Dec 12	Review	
	<b>Final Exam</b>	cumulative

**Lab Schedule: Rm. 3314, Thursdays (subject to change as the semester progresses)**

<b>Date (Thursday)</b>	<b>Experiment #</b>	<b>Title</b>
Sep 1	No Lab	<i>No lab this week</i>
Sep 8	1	Electrostatics
Sep 15	2	Equipotentials and Fields
Sep 22	3	Lightbulb Experiments
Sep 29	4	Resistance
Oct 6	5	Ohm's Law
Oct 13	1-5	<b>Make up</b>
Oct 20	6	Magnetic Field Experiments
Oct 27	7	The Oscilloscope
Nov 3	8	Faraday's Law
Nov 10	9	RC and RL Circuits
Nov 17	10	Diffraction
Nov 24	No Lab	<i>Thanksgiving Holiday</i>
Dec 1	11	Photoelectric Effect
Dec 8	6-11	<b>Make up</b>