

General Physics II

880:056:01

Fall 2009

INSTRUCTOR: Dr. Michael W. Roth

OFFICE: Physics (Begeman) 313

OFFICE HOURS: M 11 and 1; T 11 and 3; W 11 and 1; Th 3; F 11 and 1

(Note: all time extensions are the reasonable choices!!)

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E-MAIL: rothm@uni.edu

URL: <http://faculty.cns.uni.edu/%7Erothm/roth.htm> (Follow the link under the “Roth’s Fall 2009 Courses” section for our course web page.)

MEETING SPACETIME INFORMATION: T, Th 12:30 PM – 2:50 PM in PHY 301 / LNG 243.

COURSE DESCRIPTION: *General Physics II* is an activity-based approach to learning various components of classical physics: electrostatics, circuits, magnetism, induction, geometrical and physical optics and some modern physics. Emphasis will be placed on learning in an interactive setting including completion of various activities in tandem with discussion, introduction to theory and copious amounts of problem solving.

OBJECTIVES: The mission of *General Physics II* is to spark interest in the eyes of students, to have students question and analyze the world around them, to have students think, and for the class to be an experience far deeper than just a series of meetings and deadlines. At a more pragmatic level, *General Physics II* will help the student prepare for a career in any field(s) where science is important. The successful student will be able to envision how physics applies to situations in the everyday world as well as in technical settings and will be able to problem solve at a level utilizing algebra.

REQUIRED READING MATERIALS:

- i. Textbook:** *College Physics: A Strategic Approach* Vol. 2, by R. Knight, B. Jones, and S. Field, Pearson-Addison Wesley, 1st Edition (2007).
- ii. Ancillaries:** Lab activities, available at Copyworks.

PREREQUISITE(S): 880-054 (*General Physics I*)

SPECIAL NEEDS: The Americans with Disabilities Act of 1999 (ADA) provides protection from illegal discrimination for qualified individuals with disabilities. If you have any condition such as a physical or learning disability, which will prevent the fullest expression of your abilities

or will require academic accommodations and would like to request instructional accommodation due to disabilities, you must arrange for such accommodation through the Office of Disability Services, 213 Student Services Center, Tel. 273-2676.

EXTRA CREDIT/DROPPED GRADES: I don't offer extra credit that will add numerically to your score, nor do I drop any test scores, the main reason being that I don't want to discount the importance of the regular material being presented in the course. However I drop the lowest lab activity score and the lowest homework score.

GRADING: I have tried to make every major effort for you in this class worth a "test score", or 100 points. Your grade will be calculated based on the best 6 out of 7 homework sets, 3 in class tests, the best 9 out of 10 activity reports and one comprehensive, in-class final examination with the following weights:

- 6 best homework sets of equal weight (100 pts. total possible)
- 3 in class tests of equal weight (300 pts. total possible)
- 9 best activity reports of equal weight (100 pts. total possible)
- 1 comprehensive final test (100 pts. possible)

Although any appropriate curve(s) will be announced in class, *it is assumed that the following standard scale will be utilized.* The grade cutoffs are as follows:

93% and above A,	77% C+,	60% D-,
90% A-,	73% C,	below 60% F
87% B+,	70% C-,	
83% B,	67% D+,	
80% B-,	63% D,	

ATTENDANCE: Although roll is not formally taken in class, it is expected that all participants with body temperatures above 80F will attend regularly. (If you are not in this category please see me.) If there is a reason that you must miss class please talk with me to make arrangements to cover the material.

LATE POLICY: Homework sets and lab/activity reports are due on the dates indicated on the class calendar. Your work is due on time, with the exception of reasonable **documented** excuses. *Late work will be docked 50% of face value if turned in before solutions are posted and 100% after solutions have been posted.* **All homework and activity solutions will be posted at latest two days after the due date.** If you are going to miss a test, you **must** notify me in advance (preferably one week) so alternative arrangements can be made. If you miss a test, which is not excused, a grade of zero points must be assessed for that particular piece of work. You must take all three-hour exams as well as the final exam in order to pass the course.

ACADEMIC DISHONESTY/PLAGIARISM: Collaboration on homework and certainly activities is welcome, but please keep in mind that your final, turned-in work should be your own and not copied. However, no form of cheating/plagiarism will be tolerated in this class. If anyone

is suspected of academic dishonesty, I will privately speak with them in an attempt to reach a solution to whatever problem is manifesting itself. If anyone is without doubt determined to be cheating on a given assignment/test and no resolution can be offered, *negative credit will be given*. In all cases, the Department and/or College administration will become involved.

GENERAL PHILOSOPHY: In a nutshell, I believe in having fun while teaching and learning physics. I want you to do your best in a subject that is not easy. If you get behind and the class feels like a diesel tractor pulling you through mud, feel free to use me as a resource to help you, as well as the **physics tutors** who are available at times I will announce. Asking questions in class is strongly encouraged. If you don't wish to ask questions in class please come by my office, give me a call, make an appointment or even send me anonymous e-mail! Also, I like to talk a little about related contemporary issues in class, so if you've found an interesting newspaper clipping or watched a good documentary you'd like to share with us, please mention that. The most entertaining to me are tabloid articles that beg to be de-bunked using physics. I hope you find that physics is everywhere around you and not just in a class you had to take.

INSTRUCTOR'S STATEMENT: The instructor reserves the right to modify this syllabus in a reasonable fashion and in the best interest of the class.

ACTIVITY REPORTS: Your activity report should contain a title, purpose statement and answers to the activity questions. Please make sure that **all graphs are on graph paper** (I will provide this for you), that **you show sample calculations** somewhere in the report if appropriate and last but not least that any **figures you draw are constructed as carefully and neatly as possible**. Please remember that you have some time to turn in your reports. This is mainly because I want to see your best work and I don't want you to feel you have to rush to get any activity report done without thorough consideration. **The best answers are complete, well-constructed sentences**. Feel free to take time and elaborate on your ideas! I thoroughly enjoy my job and will gladly take the time to read what you have to say. In fact, the criterion I use for complete answers to questions is the following: *your answer is complete when someone not having seen the lab activity guide is able to reconstruct the question you were responding to just from your answer*. Activity reports are graded on a scale of 10 points max, but typical scores fall in the 8-9 range. An 8 means that I thought you did a good job on the activity. A 9 means you exhibited a particularly clear understanding of the material, possibly made very nice figures, etc. – a *very nice job*! A 10 means you showed unexpected insight and initiative – that you went above and beyond the call of duty in either the activity or the content of the write – up. If you score less than 8 on either of your first two activity write-ups you may see me and re-submit your work for re-consideration. After all, the activities are a learning tool, not a testing tool.

ABOUT THE HOMEWORK: Homework sets need not be typed but should be neat and readable. Answers to conceptual questions should include all reasoning. Answers to quantitative problems should show all steps taken to get the answer. Answers to homework problems that are only a number or answer with no supporting reasoning **will not be given credit**. Homework due dates are indicated in the schedule; please see the “Late Policy” section for details. The homework problems I have selected for you are in the following table.

HW Set	Chapter	Assignment
1	20	Q 13; P 1, 15, 24, 32, 49, 51, 57, 62, 65
1	21	Q 17; P 8, 27, 38, 46, 48, 54, 56, 62, 73
2	22	Q 11; P 16, 33, 37, 42, 45, 46, 48, 50, 53
3	23	P 17, 23, 26, 34, 52, 58, 59, 62, 64, 73
3	24	Q 17, 34; P 5, 17, 34, 42, 51, 52, 53, 57
4	25	Q5, 9, 14; P 1, 4, 12, 16, 18, 54, 59
5	17	P 6, 11, 30, 31, 34, 42, 50, 56, 58, 60
5	18	P 7, 16, 22, 27, 28, 30, 51, 52, 59, 61
6	19	P 3, 4, 5, 14, 19, 20, 26, 27, 30, 37
7	29	P 11, 17, 20, 23, 29, 32, 36, 49, 57, 59
7	30	P 15, 16, 24, 25, 33, 35, 51, 67, 69

GENERAL PHYSICS II CLASS SCHEDULE – FALL 2009

Week	Day	Date	Topic(s)	Activity	Text Chapter	Item(s) Due
1	T	Aug.	25	Intro / Electric Forces and Fields	<i>1 (Not Due; Elec. Interactions & Charge)</i>	20
	Th		27	Electric Forces and Fields	<i>2 (Charging by Contact and Induction)</i>	20
2	T	Sept.	1	Electric Forces and Fields		20
	Th		3	Electric Potential	<i>Not Due; Field and Potential Computer Simulations</i>	21
3	T		8	Electric Potential		21
	Th		10	Current and Resistance	<i>4 (Simple Circuits...)</i>	21/22
4	T		15	Current and Resistance		22
	Th		17	Circuits	<i>5 (Not Due; Elec. Resistance...)</i>	23
5	T		22	Circuits / Exam 1 Review	<i>6 (Series & Parallel Circuits)</i>	23
	Th		24	Exam 1 (CH 20 – 22)		
6	T	Oct.	29	Magnetic Fields and Forces		24
	Th		1	Magnetic Fields and Forces	<i>8 (Magnetic Poles...)</i>	24
7	T		6	Magnetic Fields and Forces	<i>9 (Magnetic Force on...)</i>	24
	Th		8	Electromagnetic Induction / Waves	<i>10 (DC Motor; Not due)</i>	25
8	T		13	Electromagnetic Induction / Waves	<i>11 (Electromagnetic Induction)</i>	25
	Th		15	Electromagnetic Induction / Waves	<i>19 (Not Due; Polarization of Light)</i>	25

Week	Day	Date	Topic(s)	Activity	Text Chapter	Item(s) Due
9	T Th	Oct. 20 22	Wave Optics / Exam 2 Review Exam 2 (CH 23 - 25)	<i>17 (Interference of Sound and...)</i>	17	Act. 11; Homework 4
10	T Th	27 29	Wave Optics Ray Optics	<i>18 (Diffraction)</i>	17 18	Activity 17
11	T Th	3 5	Ray Optics Ray Optics	<i>14 (Refraction...)</i>	18 18	Activity 18
12	T Th	10 12	Optical Instruments Optical Instruments	<i>16 (Using Lenses)</i>	19 19	Activity 14 Homework 5
13	T Th	17 19	Atoms and Molecules / Exam 3 Review Exam 3 (CH 17 – 19)		29	Act 16; Homework 6
14	T Th	24 26	No Class – Thanksgiving Break No Class – Thanksgiving Break			
15	T Th	Dec. 1 3	Atoms and Molecules Atoms and Molecules	<i>21 (Hydrogen Spectrum)</i>	29 29	
16	T Th	8 10	Nuclear Physics Nuclear Physics / Review for new component of final		30 30	Activity 21 Homework 7
17	Th	Dec 17	Final Exam (Comprehensive); 3 P.M. – 4:50 P.M.			