Physics 130 A – Principles of Physics II
Spring 2009

Instructor: Timothy Stiles
Office: Room 238 Julian Science and Mathematics Center
Phone: 658-4059
Office Hours: often available but will Always be available the following
M: 9-10; T: 2-3; W: 10-11:30; F: 9-10

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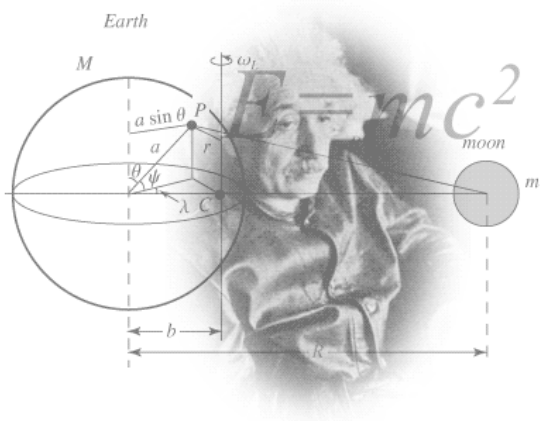

Meeting Times: MWF 2:50-3:50
T (lab): 8:30-11:20

all classes meet in Room 225 of the Julian Science and Mathematics Center

Required Materials:

1. Randall Knight Physics *for Scientists and Engineers*; Volumes 3 and 4, second edition, 2008; with student workbooks
2. Physics 130 Lab Manual (available in the DePauw University bookstore)
3. Separate notebook for lab journal
4. Scientific calculator

Course Overview:

Physics 130 is part two of the two-semester calculus-based introductory physics course for science, engineering, and pre-med students. Topics covered include wave phenomena, optics, electrostatics, magnetism, and circuits.

Active Class Participation:

Becoming skilled in physics requires more than passive attention during class times. Like music and athletics, gaining proficiency in science requires preparation and practice. Research has demonstrated that physics classes that focus on active learning are better in providing students with long term understanding of material than traditional lecture oriented sessions. Class periods are your opportunities to work with other students and the instructor to focus on these abilities. Because of this, I will expect you to arrive in class having thoroughly read the chapter for the day.

The text for this course includes associated workbooks which contain a large number of concept-oriented exercises for each chapter. These exercises are generally straightforward and are a good way to test your understanding of the textbook readings. I will ask you to do several of these exercises before each class meeting and we will then discuss your responses during class.

In addition to these, on the course Moodle web site I have a set of Reading Questions corresponding to each reading assignment. These are due at 9 AM on the day we discuss a given chapter in class (e.g. you must answer the questions by 9 AM Wednesday morning for the reading assigned for a Wednesday class). They are due in the early in the day so I have the opportunity to review your answers and determine which sections or concepts we will focus on during our class meeting.

The final question of each reading quiz is a short-answer type question which gives you the opportunity to discuss any aspect of the reading that you found particularly troubling or enjoyable. That question is weighted heavily because of its importance in enabling me to plan the lesson. If you do not feel that you completely comprehend any section of the text or any of the text exercises, this is your space to let me know so that we can focus on those ideas and concepts during the next class period.

In-Class Work:

Each day you will produce something to turn in at the end of class. Most days this will take the form of a problem you and two or three other students worked on jointly. Some days it may just be a brief “two-minute essay” concerning the day’s class and either your understanding of or my presentation of the material. These will be graded on the basis of evidence of intellectual engagement, not the correctness of the solution to a problem. You will have at least two opportunities during the semester to make up for missing grades for in-class work.

Absences from class

I realize that not everyone can be present every day, so I will drop the lowest 3 scores on the Reading Questions and in-class activities. If circumstances require you to miss several classes or be absent for an extended period of time, please let me know as soon as possible so that we discuss arrangements

Homework Problems:

Every week there will be a written homework assignment due at the beginning of class. Usually, this assignment will be due on Friday. Because of conflicts with exams, there are two weeks with a homework assignment due on Monday (see schedule below). A separate handout documents the required format and grading procedures for these assignments. Each problem will receive a score on a 10-point scale, as outlined on the handout.

I encourage collaborative work on all your assignments, provided you are intellectually engaged in the solution of each problem. You may not simply copy someone else's solution, which means you may not work in a group by subcontracting a different problem to each group member. You will not learn effectively by copying answers – you lose the opportunity not only to think for yourself but also to obtain feedback on your thinking. Moreover, presenting someone else's work, even on a homework problem, as your own constitutes *academic dishonesty*. I am obliged to follow up on any suspicions of such according to the procedure outlined in the *Academic Handbook*.

Laboratory:

You should purchase a separate notebook just for the physics lab. This lab journal will be your record of everything you do during the lab period. The journal should include all your raw data, calculations, numerical analysis of the data, graphs, etc. I will collect your lab journal at the end of each lab meeting and will return it to you during the next class meeting. Guidelines for keeping a lab journal will be discussed during the first lab period.

You should take care to read the lab manual before coming to lab. Each lab will have a prelab worksheet to complete. These worksheets will often ask you to plan part of your procedure or derive an equation that will be used in lab. At the end of each lab section, you will submit some materials as part of an exit interview at the end of the lab period. The exit interview is an opportunity for you to discuss the results of the experiment with your lab instructor.

Each lab meeting is graded on a 10 point scale. The prelab worksheet and exit interview are worth three points each. The lab journal is worth another four points. Guidelines for

For two experiments, you will be required to write a lab report in which you describe your experimental procedure, the results of your experiment, and the meaning or significance of your results. Reports, when required, are due by the next lab period. Your grade on a lab report will be based on a number of criteria including content, clarity of writing, and grammar and spelling. If you are not satisfied with your grade on the first lab report, I will allow you to rewrite it; if you choose this option, your lab report grade will be the average of your two scores. See the document titled The Lab Report in the Physics 130 lab manual for information on what I expect in the way of format and content for these reports. Each report will be worth 20 points toward your lab grade.

Another 30 lab points can be earned via scores on three lab quizzes administered roughly every fourth week during the semester. The lab quizzes will consist of questions and exercises related to the lab experiments and will be announced several days in advance. You can use your journal when taking a lab quiz, but no other material (like, for example, the lab manual). Since you will be using your journal when writing reports and taking lab quizzes, it's obviously a good idea to make sure your journal is complete and well-organized.

Occasionally, circumstances (sports activities, competing class requirements, illness, etc.) will make it impossible for you to attend lab at your scheduled time. If that happens, it may be possible for you to attend one of the other Physics 130 labs during the week. But no matter what, any missed lab must be made up by the end of the following week or the three-point deduction rule (see above) will be enforced. Note that it is your responsibility to make arrangements to make up a missed lab.

Grading:

Your course grade will be determined by the percentage of total possible points, weighted by category.

Each of three exams	10%
Lab Score	15%
Homework	15%
Reading Questions	10%
In-class activities	10%
Final Exam	20%

The letter grade earned by your weighted percentage will be:

		A :	93-100%	A- :	90-92%
B+ :	87-89%	B :	83-86%	B- :	80-82%
C+ :	77-79%	C :	73-76%	C- :	70-72%
D+ :	67-69%	D :	63-66%	D- :	60-62%
F :	<60%				

Note that this grading scale uses absolute numbers as a percentage of your work. There is no curve and thus it is to your advantage to work with others both in doing the homework assignments and studying for quizzes and exams.

ADA Accommodations:

If you have a situation which merits accommodations under the ADA, please follow the steps outlined in the DePauw academic handbook. The first step is informing the ADA coordinator at Academic Services in Harrison Hall. I can only agree to accommodation requests that I receive through academic services.

Getting Help:

Because of the pace of the course, it is important not to fall behind. In addition to the text and classmates you may seek help from me, during or outside scheduled office hours. You may also contact me with questions via email, which I will usually respond to fairly promptly (and always within 24 hours).

Additionally, I would like to make you aware of the Academic Resource Center. It is now located in Room 115 of Asbury Hall. There is a schedule of available tutoring in Physics classes available at http://depauw.edu/admin/arc/Q-center/qconsult.asp#phys.

If you have problems that go beyond the classroom, Counseling Services can help. Counseling Services is located on the second floor of the Memorial Student Union Building. Feel free to contact them at (765) 658-4268.

Q-Competency:

Although it was not listed on the schedule, it is possible to fulfill your Q Competency requirement through this course. Please contact me within the first week of class to discuss arrangements for satisfying Q Competency.

Other Policies:

Any official communication from me will be via e-mail to you depauw.edu account.

This syllabus represents the best approximation of the course policies, grade requirements and schedule that was available at the beginning of the semester. It is not possible to foresee every circumstance; therefore I reserve the right to make changes or additions during the semester. Any change to this syllabus will be announced in class, by e-mail, and on the Moodle site for the course.

Tentative Schedule:

	Monday	Tuesday Lab	Wednesday	Friday
Jan 26-30	Intro 20.1 Wave Model	20.7 Doppler Effect	20.2-20.4 Waves in 1D	20.5-20.6, 21.1 Superposition HW1
Feb 2-6	21.2-21.4 Standing Waves	Standing Waves on a string	21.5-21.8 Interference	22.1-22.3 Double-slit interference HW2
Feb 9-13	22.4-22.6 Diffraction/ Interferometry	Interference and Diffraction (lab report)	23.1-23.3 Reflection and Refraction	23.4-23.6 Ray Tracing HW3
Feb 16-20	23.7-23.8 Lenses and Mirrors	Thin Lenses	25.1-25.3 Atoms and Photons	25.4-25.5 Matter Waves HW4
Feb 23-27	Review	Lenses in Combination	**Exam 1**	26.1-26.3 Electric Charge
Mar 2-6	26.4-26.5 Coulomb's Law	Spectroscopy	27.1-27.2 EField I	27.3-27.4 EField II HW5
Mar 9-13	27.5-27.7 EField III	Speed of sound	29.1-29.3 Electric Potential Energy	29.4-29.5 EPot I HW6
Mar 16-20	29.6-29.7: EPot II	Simple Circuits/Ohm Law	30.1-30.2 Pot and Field I	30.3-30.4 Pot and Field II HW7
Mar 23-27	Spring Break			
Mar 29-Apr 3	30.5-30.7 Capacitors	Capacitors DC	Review	**Exam 2**
Apr 6-10	31.1-31.3 Electric Current	Magnetic Fields	31.4-31.5 Conductivity	32.1-32.3 Kirchoff HW8
Apr 13-17	32.4-32.6 Batteries/resistors	Current Balance	32.7-32.9 RC Circuits	33.1-33.4 Biot-Savart Law HW9
Apr 20-24	33.5-33.8 Magnetic Force	Oscilloscope/RC	33.9-33.10 Motors and Magnets	34.1-34.3 Motional EMF HW10
Apr 27-May 1	34.4-34.7 Lenz/Faraday	RLC Circuit	34.8-34.10; 35.1 Inductance; EM HW 11	**Exam 3**
May 4-8	36.1-36.3 AC Circuits	No Lab	36.4-36.5 AC Circuits II HW12	No Class; End of the semester
May 11-15	Final Exam: Saturday May 9; 1:00-4:00			