

College Physics II (PHYS 186)

Syllabus

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1 How to Find Me

The best way to reach me is **e-mail**, edis@truman.edu. My office phone is 785-4583, but I don't check messages often.

My office is MG 3004, and my office hours are: Tuesdays and Thursdays: 10:30–11:45, 15:00–15:50; Wednesdays: 13:30–15:20. Check my **calendar** (edis.sites.truman.edu/schedule/) to see when might be best.

I will post course-related notices and documents on the **College Physics II page** (edis.sites.truman.edu/college-physics-ii/).

2 Course Description

Physics 186 continues the broad survey of physics started in Physics 185. While it does not rely on calculus, it does require a solid understanding of algebra and trigonometry. Both the lectures and the labs will deal with abstract problem solving. The labs emphasize using mathematics to explain the experiments performed; the lectures acquaint you with basic concepts in waves, electromagnetism, and modern physics.

This course involves a fair amount of homework and individual study of the textbook. Physics is notorious in that you might think you grasp the concepts, but often discover otherwise when confronted with a problem you have to solve. *Much of your learning will come about as you solve problems,*

4 REQUIRED COURSE MATERIALS

not just read the text! You will work (and be graded) both individually and as part of your lab group.

Physics 186 is a General Honors Course, and it fulfills the *Physical Science Mode of Inquiry* of the *Liberal Studies Program*.

3 Schedule

Lectures: Tuesday and Thursday from 9:00 to 10:20 in MG 1000.

Lab: Wednesday 9:30–11:20 and 11:30–13:20 in MG 1002.

Final Exam: Thursday May 11, 10:00–18:00 in MG 1002 and 1006.

4 Required course materials

You'll need a copy of the textbook: *College Physics: A Strategic Approach* by Knight, Jones, & Field, **including access to *MasteringPhysics*, the online tutorial and homework system that is associated with the textbook.** *MasteringPhysics* may include access to an ebook version of the textbook. Students who have taken this course before tell me that it is preferable to have the physical textbook as well, but it's your decision whether you want to have a hardcopy. If you run into a package offering a Student Workbook, keep in mind that I don't require or use any Workbooks.

I would prefer that you get the third edition; that's what I have and that's what I will refer to. The earlier editions are different but not radically so; if it's much cheaper, it could work for you. Make sure, however, that your *MasteringPhysics* access is to the third edition.

If you get the textbook without access to *MasteringPhysics*, you can obtain access from www.masteringphysics.com.

When on *MasteringPhysics*, use Course ID "EDIS186SPRING2017".

You will also need a decent calculator: It will need to be able to calculate trigonometric functions, exponentials, and so forth, and to be able to handle scientific notation.

5 Sections covered

I will not go over everything in the textbook. Here is a rough guide to what chapters and sections I will skip entirely. (This is subject to change.)

Chapter	Sections skipped
14	2, 5, 6, 7
15	2, 6, 7
16	4, 5
17	4, 5, 6
18	4, 5, 6, 7
19	Skip whole chapter
20	
21	6
22	
23	6, 8
24	8
25	
26	Skip whole chapter
27	5, 8
28	1, 8
29	3, 4, 7, 8, 9
30	6

6 Online Assignments

I will be assigning about 6–10 homework exercises roughly every week, which you will do online, using the *MasteringPhysics* system (The assignments will be under Course ID: EDIS186SPRING2017). If you use it properly, the online material will be very helpful to you. It's vital for you to grapple with problems on your own in order to learn physics. Following the lectures and reading the textbook is what gets you going, naturally, but the only way to

see if you've really grasped the ideas and not just fooled yourself into thinking you understand is to do lots of problems.

As an incentive for you to practice online, 10% of your final grade will be based on your homework assignments. Note that 10% is not a lot. I don't want you to have to worry about homework being a major influence on your overall grade, but I also want you to take it seriously and not fall behind—you need to consistently practice problem solving.

Check the [Course Calendar](#) or the MasteringPhysics site for the course for assignment deadlines. Deadlines are 11pm on the days noted. Each days delay reduces your score for late items by 10%, but only up to a maximum of 40%. [E-mail me](#) if you need an extension; I will extend your deadline, no questions asked.

You have a maximum of 6 tries to answer questions. Many of the questions come with hints; don't hesitate to use them—there's no penalty.

Let me emphasize again: the object of the homework is to give you practice, not to test you. If you come to my office and ask, I will walk you through homework problems and even give you answers. But *try it yourself first!* Fight the computer; get frustrated. It's all part of the learning process.

If you [email me](#), I will also often help out. But please, make sure you're not asking about something trivial, or just hunting for a few points extra on a homework assignment. Say that some quirk of the online assignment system cheats you out of 10% of the credit due you on a problem. (This will occasionally happen.) This error will affect less than 0.01% of your final grade. Less than one percent of one percent. It's not worth your time or my time to worry about such things. An extra ten minutes reading your textbook will have a much bigger effect than recovering your miniscule 10% of a problem credit.

7 Exams

You will have two midterms and a final exam. You may bring and consult your textbook and notes during exams. Bring your calculator to all exams.

I don't impose strict time limits during exams. We will have exams in the labs, not the classroom. I will start at 9:30 and keep the exam going until I go home for the night. You can start and finish any time you like. You may also interrupt your exam to go to another course and come back later, as long as you leave your book, notes, and partially completed exam with me.

Be forewarned: my exams are *difficult*. I like to see if you can think about physics, not just plug-and-chug to solve problems very similar to what you have encountered before. I give plenty of partial credit, but to get it, you will need to write clearly, and make sure you work with symbols as much as possible rather than plugging in numbers from the outset.

Typically, a quarter to a third of my students get A's from the course. But my exams are difficult.

For exam dates, see the [Course Calendar](#).

8 Labs

You will have ten labs throughout the course. Check the [Course Calendar](#) for a schedule.

Each lab is described in a pre-lab. These are available on the [College Physics II web site](#). Read the appropriate pre-lab before you show up for a lab. You may also want to print it out. You only have two hours to work in the lab; don't waste time by having to read up on the lab during lab time.

This course is not for physics majors, so the object of the lab is not to introduce you to rigorous lab procedures. I will keep things informal; I will not, for example, require a special lab notebook or demand a set format for lab reports. Typically, you will write down what you are doing in the lab on loose sheets of paper. This will include observations, calculations, and graphs. This is what I will require that you turn in at the end of a lab session: a record of what you did, as you did it. Indeed, your pre-labs will provide a list of what exactly you need to turn in at the end. You do not have to collect your material and organize and prettify it for a formal report. You certainly do not need to write down a description of the experiment, the procedure, and so forth.

You will work in groups of two, or three at most. Groups can change from lab to lab. You will turn in a single report for each lab group.

If you do a competent but unimaginative lab, so that you turn in all the requirements but don't show any evidence of thinking much about what you were doing, your group will receive about a 16 or 17 out of 20 points for that lab. Errors and omissions will reduce that grade. Getting closer to 20 out of 20 requires that you demonstrate to me that you gave some thought to what you were doing, beyond fulfilling requirements set out in the pre-lab. For example, if you invent some interesting procedure to do

a certain measurement, make a relevant observation and speculate on what might have caused it, or show some awareness of the possible sources of error and uncertainty in your measurements, write all these down. These show some thought, and impress me.

It's very difficult to organize lab make-ups, so I do not intend to have make-ups. *Do not miss any labs!*

You will also have a lab exam toward the end of the semester. This will be based on activities done during lab, and each of you will work alone. If you make a habit of relying on others in your lab group to handle the equipment and make decisions, then you will not be able to complete the lab exam successfully. Make sure you actively participate in every aspect of every lab.

Check the [Course Calendar](#) for when the lab exam is scheduled.

9 Grades

There may be minor changes in how I determine the final letter grades, but if you want to see how you are doing, you should first refer to this table to find out how much each of your tests and assignments are worth:

Online Assignments	10%
Labs	$10 \times 2 = 20\%$
Lab Exam	5%
Class Participation	5%
Midterms	$2 \times 20 = 40\%$
Final	20%

The default percentage ranges corresponding to letter grades are:

89.5%–100.0%	A
79.5%–89.4%	B
69.5%–79.4%	C
59.5%–69.4%	D
0.0%–59.4%	F

“Class participation” represents the small amount of flexibility I will have in adjusting your grade depending on my judgment of how you've done in

learning physics. It will naturally be higher the more I get to know your work, and the more you ask questions and participate in the classroom. *I love questions in class*, and if you ask many, you'll be sure to get the full 5%.

I may shift the borderline between certain letter grades by a small amount so that the line lands in the middle of a naturally occurring gap. Thus, it is possible you may get 88% and end up with an "A," but do not count on it.

10 Policies & Advice

- Expect to spend 7 hours per week outside of class on this course; even more if you find the course hard. Physics is notoriously difficult.
- Do not expect to read something once in your textbook and understand it; plan on going over much of the text more than once.
- I will not lecture directly out of the textbook, but I expect you to study it. If you are having difficulty understanding parts of the textbook which I have not addressed in class, it is your responsibility to ask about those parts.
- I encourage you to ask questions often, and I will ask you questions often. It is perfectly acceptable if you struggle with a question and get bogged down.
- In exams and labs, you must show how you arrived at your result, either by way of an explanation, or by clearly showing the steps in your calculation. If you did something correctly but I am unable to follow your reasoning as it is written, you may receive little or no credit. It is your job to make it easy for me to understand what you are doing.
- I will return graded work to you during class.
- There will be no making up of labs or exams, or late work accepted, unless you are on some legitimate school-related trip, you are sick, there is a death in the family, or something of that nature. If you are unable to notify me beforehand, please notify me as soon as possible afterwards. If you don't have a valid reason for missing a class, please don't ask to make up what you missed. Oversleeping is not a valid reason, nor is a problem with your printer or computer. Problems having to do with non-prescription drugs or alcohol are not valid reasons either. If you

miss a class for *any* reason, you are responsible for finding out what you missed and for getting work to me on time.

- If you are sick, please *stay home*. You will be allowed to make up whatever you missed.
- I care about maintaining academic integrity, and I will apply all Truman policies. See http://conduct.truman.edu/conduct_code.asp for the **Student Conduct Code**. Nonetheless, I do not expect academic dishonesty, nor will I go out of my way to look for it. I run my classes on a kind of honor system: I will often leave you alone during labs and exams, and I take your word for whether or not you missed a class or exam for a valid reason. If I do find anyone cheating or helping someone else cheat, they will automatically fail the course.
- Have your textbook, a pen or pencil, and a calculator (one which does trigonometric functions and scientific notation) with you during classes, lab, and tests, and do calculations and derivations along with me during class.
- I will do my best to accommodate all disabilities. Talk to me about what you may need.