

# 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](mailto: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: 10:00–10:20, 13:30–14:50; Wednesdays: 10:00–11:20, 12:30–13:00. I will almost always be in my office then. I will usually be around Mondays 14:30–18:00, but that's less of a guarantee. Monday 10:00–13:30 is also usually good, but it's best to **e-mail** me first. There is some slight week-to-week variation in my schedule, so it's always a good idea to check my **calendar** ([edis.sites.truman.edu/schedule/](https://edis.sites.truman.edu/schedule/)) online to make sure.

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

## 4 REQUIRED COURSE MATERIALS

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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, 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 15:00 to 16:20 in MG 1000.

**Lab:** Wednesday 13:30–15:20 in MG 1002.

**Final Exam:** Thursday December 12, 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. The fourth edition is already out, and if you have it it will be fine, but the third edition is cheaper and works just as well. Make sure that your *MasteringPhysics* access is to the third edition; the problem numbers correspond to the third edition.

If you get the textbook without access to *MasteringPhysics*, you can obtain access from [www.masteringphysics.com](http://www.masteringphysics.com).

When on *MasteringPhysics*, use Course ID EDIS186FALL2019.

## 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: EDIS186FALL2019). 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 Attendance Policy

You will need to be present in the classroom to do well in this course. But it's *your* responsibility to make sure you do well. I will not spend time keeping track of your attendance, and if you're not there, I will assume you have good reason to be absent. For example, if you are sick, please stay home! You don't need to tell me when you expect not to be present.

I cannot guarantee opportunities to make up labs or exams that you might miss. If you let me know ahead of time, I will try and accommodate you as best as I can, and I will make decisions on appropriate make-ups on a case-by-case basis. But again, I cannot guarantee that we can work something out—your best course of action is not to miss anything.

## 11 Academic Integrity

I care about maintaining academic integrity, and I will apply all Truman policies concerning **academic dishonesty**. I expect you to be familiar with the **Student Conduct Code**.

Do not present something that is not your own work as your own, whether you get it from another student or online. You will have plenty of opportunity and time to consult me about anything you're not sure about, including during exams. I'm much more concerned with you learning how to think about physics than showing an ability to spit out correct answers on demand.

In any case, 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 exams, and I expect you will continue to work as normal in such circumstances.

## 12 Advice

- Expect to spend at least 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.
- 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.

## 13 Lawyer Avoidance

The minimum investment of time by the average Truman student necessary to achieve the learning goals in this course are not less than one hour (50 minutes) of classroom instruction and a minimum of two hours of out of class student work each week per credit hour awarded or at least the equivalent of three hours (2:50) of laboratory work, internships, practica, and other academic work each week per credit hour awarded. This average time per week for an average student may have weekly variations.

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the [Disability Services](#) office (x4478) as soon as possible.



In each classroom on campus, there is a [poster of emergency procedures](#) explaining best practices in the event of an active shooter/hostile intruder, fire, severe weather, bomb threat, power outage, and medical emergency. Students should be aware of the classroom environment and note the exits for the room and building. For more detailed information, please consult the [Emergency Guide for Academic Buildings](#). A [six-minute video](#) provides some basic information on how to react in the event there is an active shooter in your location.

Truman students, faculty, and staff can sign up for the TruAlert emergency text messaging service via TruView. TruAlert sends a text message to all enrolled cell phones in the event of an emergency at the University. To register, sign in to TruView and click on the “Truman” tab. Click on the registration link in the lower right of the page under the “Update and View My Personal Information” channel on the “Emergency Text Messaging” or “Update Emergency Text Messaging Information” link. During a campus emergency, information will also be posted on the [TruAlert website](#).

Truman State University and its faculty are committed to supporting our students and fostering an environment that is free from bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g., sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member is a “mandated reporter” and must notify Truman State University’s Institutional Compliance Officer and share the basic facts of your experience. The Officer will then be available to assist you in understanding all of your options and in connecting you with resources both on and off campus. If you would prefer to have a confidential conversation about an experience, the counselors at University Counseling Services are *not* mandated reporters and they can be reached at 660-785-4014. For after-hours crisis counseling, call 660-665-5621. For more information regarding Truman’s policies and procedures relating to any form of gender discrimination, please consult Truman’s [Non-discrimination Policy](#) and [Complaint Reporting and Resolution Procedure](#).

Education records are protected by the Family Education Right to Privacy Act ([FERPA](#)). As a result, course grades, assignments, advising records, etc. cannot be released to third parties without your permission. There are, however, several exceptions about which you should be aware. For example, education records can be disclosed to employees or offices at Truman who have an “educational need to know.” These employees and offices may include your academic advisor, the Institutional Compliance Officer, the Registrar’s Office, or Student Affairs depending on the type of information.