College Physics I (Phys 185)
Syllabus

Taner Edis

Fall 2025

1 How to Find Me

The best way to reach me is e-mail, *edis@truman.edu*. I usually respond within a few hours, even late at night.

My office is MG 3004, and my office hours are: Tuesdays and Thursdays: 12:00–14:50; Wednesdays: 12:30–13:20 and 15:30–17:20. If you want to see me then, come by my office.

I'm also available most times when I am not actually teaching or have another meeting scheduled: see my calendar (*edis.sites.truman.edu/schedule/*). We can also Zoom. Email me ahead of time to set up a time that is good for both of us; my Zoom meeting ID is `taneredis`.

The College Physics I page (*edis.sites.truman.edu/college-physics-i/*) is where course-related documents will live. I have no use for Brightspace; I'll keep the minimum there to satisfy administrative requirements, but if you want up-to-date details about how you're doing, it's best to email me.

2 Course Description

College Physics I starts a broad survey of physics. 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 involve using mathematics to explain the experiments performed; the lectures acquaint you with basic concepts in mechanics and thermodynamics.

This course involves a fair amount of individual problem-solving. 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!* You will work (and be graded) both individually and as part of your lab group.

Physics 185 is an Honors Scholars Course, and it fulfills the *STEM Perspective* of the *Dialogues Requirements*.

3 Schedule

Lectures: Tuesday and Thursday from 15:00 to 16:20 in MG 1000.

Lab: Wednesday 10:30–12:20 and 13:30–15:20 in MG 1002.

Final Exam: Thursday December 11, 11:30–13:20 in MG 1000 and the labs.

4 Required course materials

Standard textbooks are designed for large classes with hundreds of students. I will have a chance to interact with each of you in a closer manner, and I can teach in a less mass-produced fashion.

Therefore, we will not use a textbook. The online, free textbook *College Physics*, by Urone, Hinrichs, Dirk, and Sharma will serve if you want a text to help you study and to provide you with problems and exercises to practice. You are not required to use this textbook, but if you don't, you will have to make sure you closely follow my lectures and take good notes.

5 Assignments

You learn physics by solving problems. You will have nine assignments during the semester, due the Thursdays of most weeks without an exam. Assignment questions are drawn from past exams I have given in this course. Just write your answers on loose sheets of paper, staple them, and turn them in during the class meeting on deadline days. Alternatively, you can email me a PDF or pictures of your solutions. Due dates are listed on the Course Calendar.

Assignment questions are very similar to what you will encounter on your exams. Standard textbook problems are designed for large courses, and they often tempt students to adopt a find-an-equation-and-plug-in-numbers approach. I'm not interested in that—I design my questions to get students to think about the physics, to work with symbols and graphs rather than numbers, and to elicit the sort of complex reasoning process physics demands. I also want students to communicate with me about the problems they are working on. Walk into my office or send me email, and tell me about your thought process so far.

Each assignment has a few extra questions at the end. I will not grade these; don't hand them in. The graded questions represent a *minimum* level of practice doing physics. Doing well on the exams and getting an A in the course will very likely require more practice, and that is what the extra questions are there for. I will post answers to all questions in an assignment, and notify all of you by email.

As an incentive for you to practice, 10% of your final grade will be based on your homework assignments. 10% is not a lot. Homework will not be a major influence on your overall grade. I don't mind you getting help from various friends or tutors. If you ask me for help, I will work through a problem with you, including leading you up to the correct answer. I don't object to your using tools such as AI—although I'd advise you not to trust AI when it tries its hand at my sorts of questions. I don't want you to think of your assignments as being about grades rather than getting practice. But I also want you to take assignments seriously and not fall behind—you need to consistently practice problem solving.

If you turn in your assignment on paper, I will mark it up with a red pen and return it to you during our next class meeting on Tuesday. I won't write long explanations of mistakes, but you're always welcome to talk to me and ask for a fuller explanation of what might have gone wrong with your solution attempt. If you turn in your assignment by emailing me a PDF or photos, I can get your grade to you quicker, sometimes even on the same day. But I won't mark up electronic submissions; you'll need to ask me for any substantial explanations.

I'm not strict about assignment deadlines: homework is supposed to be practice, not a mini-exam. *If you need an extension for any reason, just email me.* I will extend your deadline, no questions asked. On the other hand, you need to do these assignments on time so that you don't fall behind, which is a really bad idea in physics. Please respect the deadlines as best as you can.

6 Exams

You will have four exams which will take two hours each. Three of the exams will be during the semester, and the fourth is the final, but all have equal weight. You may consult *paper* notes or textbooks during exams, but nothing with an internet connection. If you're going to make mistakes, make your own—don't give me AI slop.

My exams are unusual: *I expect you to ask questions during the exam.* You may, for example, show me what you have done so far on a question and have me quickly look it over. I will then tell you if you're on the right track, point out any obvious mistakes, and so forth. My exams are not just an occasion to test you. I design them to force you to enter into a conversation with me and learn something in the process. **If you do not ask questions during an exam, you're probably doing something wrong!** I'm not bothered by lots of questions. Never get the idea that you have to stop after a while, that it annoys me, or anything like that. As I say, I design my exams to force you ask questions.

Be forewarned: my exams are *difficult.* I want to see if you can think about physics, not just maneuver 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.

For exam dates, see the Course Calendar.

7 Topics

The following chapter numbers refer to the online textbook, though again, the textbook is optional; I will never refer to it in the classroom.

Assignment 1 1D and 2D motion. Chapters 2, 3.

Assignment 2 Basic forces and motion. Chapters 4, 5.

Assignment 3 More forces and motion. Chapter 5.

Exam 1 Assignments 1–3.

Assignment 4 Gravity and circular motion. Chapter 6.

Assignment 5 Rotational motion. Chapters 9, 10.

Assignment 6 Momentum. Chapter 7.

Exam 2 Assignments 4–6.

Assignment 7 Energy. Chapters 8, 10.

Assignment 8 Thermodynamics. Chapters 13, 14.

Assignment 9 Thermodynamics and fluids. Chapters 14, 11.

Exam 3 Assignments 7–9.

Exam 4 Assignments 1–9.

8 Labs

You will have ten labs. Check the Course Calendar.

Each lab is described in a pre-lab. These are available on the College Physics I web site. You should at least skim 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 just 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 write-ups. 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 write-up for each lab group. The write-up will be due on the class meeting immediately after the lab.

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: a B. 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.

If you miss a lab, I will try to make it up as best as we can, but it will be a pain for both of us since we will have to scramble find a suitable make-up time during the last week of classes. *Please try not to not miss any labs!*

You will have a Lab Exam toward the end of the semester. This will be much like an ordinary lab, and almost all the equipment you encounter will be familiar from the other labs. The difference is that each of you will work alone, and that you will have only one hour in which to take all your data. You will have until the next class meeting on Thursday to turn in your Lab Exam write-up. 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 here is what everything is worth:

Assignments	10%
Labs	$10 \times 2 = 20\%$
Lab Exam	5%
Class Participation	5%
Exams	$4 \times 15 = 60\%$

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 performed. It will naturally be higher the more I get to know your work, and the more you ask questions and participate in the classroom.

Since I am not strict with deadlines, students will have turned in different amounts of work at any given time. This means that automating current percentage calculations is not possible. The best way for you to obtain your current standing in the course is to email me and ask, so I can figure out exactly what your percentage is and email you back.

I may shift the borderline between 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. But it's *your* responsibility to make sure you do well. I will not keep track of your attendance, and if you're not there, I will assume you have good reason to be absent. 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 fully make up labs or exams that you miss. If you let me know ahead of time, I will accommodate you as best as I can, and I will make decisions about make-ups on a case-by-case basis.

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 leave you alone during exams, and while it is fine to consult textbooks or look things up online, I expect you will present me with your own work in the end.

12 Learning Objectives

By the end of the course, students should be able to:

- Calculate and visualize the motion of objects undergoing constant acceleration.
- Analyze and explain how objects behave when forces are applied to them.
- Describe and calculate the work done by forces, and the effect this has on the energy of objects.
- Apply conservation laws to objects in motion.
- Connect energy concepts to heat and temperature, and understand heat transfer.
- Explain what a fluid is; calculate pressure, buoyant forces, and dynamics of fluids.
- Synthesize the above concepts to determine how objects should behave in a wide range of situations.
- Do collaborative experimental work, which includes skills in grasping the method of the experiment, manipulating apparatus, making quick and accurate observations, deriving conclusions and preparing a concise record, and evaluating the reliability of results.

13 Lawyer Avoidance

Some of the required small print.

Truman policy and federal regulations require that students demonstrate that they are academically engaged in the courses they take. You must meet this requirement within the first calendar week of the semester, beginning at 12:00 am on Monday, August 18 and ending 11:59 pm Saturday August 23. Failure to do so, or to provide an explanation of an extenuating circumstance by that date and time will result in your removal from the course. Under certain circumstances, removal could impact your scholarship eligibility or financial aid. For the purposes of this class, establishing academic engagement requires, at a minimum, showing up at a lecture or lab.

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. This class is worth 4 credit hours. Students will be expected to spend about 8 hours on coursework, which will consist of work on the current assignment due, extra problem solving, exam preparation, and finishing up of lab write-ups.

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.

Behavior that persistently or flagrantly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be asked to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Conduct.