

# Thermodynamics and Statistical Mechanics (PHYS 482) 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 10:30–11:50 and 13:30–15:20, Wednesdays: 12:30–14:20, and Thursdays 10:30–11:50 and 14:30–15:20. If you want to see me then, come knock on my office door, which I will keep closed. Don't worry, you won't interrupt anything important. Then go and hang around the blackboard immediately outside my office door. I will put my mask on and come out, and talk with you outside my office, using the blackboard.

I'm available remotely at a lot of other times as well. To find out when, check my **calendar** ([edis.sites.truman.edu/schedule/](https://edis.sites.truman.edu/schedule/))—any time in which I am not actually teaching or have another meeting scheduled, I might be able to talk to you on Zoom as well. Emailing me ahead of time is best: that way, we can set up a time that is good for both of us, and I'll put it on my calendar so that others can see that it's not available. In any case, my Zoom meeting ID is **taneredis**.

I will post course-related notices and documents on the **E& M web page**. ([edis.sites.truman.edu/em/](https://edis.sites.truman.edu/em/)).

## 2 Course Description

Electricity and magnetism is the best-developed classical field theory, allowing physicists to calculate electric and magnetic fields in a wide variety of circumstances. While E& M obviously has enormous practical applications, an introductory course such as this has a very large element of mathematics, including some heavy-duty vector calculus and various approximation techniques. This course will go deeper into both electricity and magnetism, building on what you have seen in your previous courses. As always, physics demands plenty of math, but if you have a good understanding of what you learned in Mathematical Methods (PHYS 382), that should be good enough.

## 3 Schedule

**Class:** Tuesday and Thursday 12:00–13:20, MG 1099.

**Recitation:** Thursday 13:30–14:20, MG 1099.

## 4 Course materials

Your textbook will be David J. Griffiths, *Introduction to Electrodynamics*. I am not going to follow every detail—I picked it as a textbook so that you can see a slightly different approach than what I will present in lectures. Between me and the book I hope you will find something that will work for you.

## 5 Homework and Recitations

Your homework assignments will determine 25% of your final grade. This is the first time I will be teaching this course, so I don't yet have a full list of assignments available. I hope to get feedback from you about how long you are taking to do the assignments, and adapt as the semester progresses. Normally, the assignments will be due in a week, but feel free to ask me for an extension whenever you need one.

I do not mind you discussing the homework with one another as well as with me. I will give hints if you come by my office and ask. However, I expect you to turn in the results of your own efforts—not group solutions, and

certainly not solutions directly taken from someone else. If I find assignments too similar to each other, especially if they make the same mistakes, you will have some explaining to do.

Before each homework set is due, we will also solve the recitation problems in class. I won't grade you on the recitations, though I will ask you to come up and solve them before the class. You don't have to get them right, and getting stuck is fine—I'll be there to help. The idea is to have me see you how you approach these things and help set you on the right path.

We will negotiate who gets which recitation problem during class.

## 6 Exams

The default option is three take-home exams with somewhat lengthy questions, each determining 25% of your final grade. The third take-home exam will take place during finals week. If you prefer another arrangement, we can discuss alternatives. I'm flexible.

**I expect you to work on all exams strictly alone, without *any* discussion with others inside and outside of class. I also expect you not to use online resources such as web sites and discussion groups to give you hints or solutions. *In contrast, I encourage and expect you to discuss the questions with me.***

In other words, I expect your exam process to include a dialogue with me. Don't keep quiet; ask questions. Exams are not supposed to be an ordeal but an opportunity for you to learn physics.

## 7 Final grades

If you get less than 50% in your overall grade, you will certainly fail, and 90% or better will certainly be an A, but otherwise, I don't want to declare rigid boundaries such as "65%–77% is a C" and so forth. This is a small class and I will get to know how you do physics fairly well. What will matter most for your grade is my professional judgment about how well you come to understand the fundamentals of thermodynamics and statistical physics.

If you want to know how you are doing, or what sort of performance on the final you would need for an A, or have similar grade-related concerns, just ask me. I should be able to give you a fair estimate of where you stand.

## 8 Attendance Policy

You will need to be present in the classroom to do well. But 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 expect you will do everything possible to turn your work in on time, and so avoid later hassle for both me and yourself. Nevertheless, you may find you have missed something. In this case, get in touch with me, and I will decide, on a case-by-case basis, how to make up what you have missed. I will typically assign you some appropriate extra work, have you take a make-up exam, or something similar.

## 9 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.

## 10 Lawyer Avoidance

**Some of the required mindless 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 23 and ending 11:59 pm Saturday August 28. 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.

Consistent with guidance for higher education institutions from the Centers for Disease Control and to help us reduce the possible spread of COVID-19, when this class meets, or you attend office hours, you will be required to wear a face covering that completely covers your nose and mouth. You will be expected to keep the covering on at all times while we are meeting. In the event you arrive to class without a face covering, you will be asked leave until you are able to obtain one and return. Thank you for your help in containing this virus and helping to protect your peers.

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.

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.

As part of the mindless nonsense that is required for a syllabus, I'm supposed to provide learning outcomes. Your learning outcome for this course: learning the fundamentals of electricity and magnetism, evidenced by a passing grade.