

Thermodynamics and Statistical Mechanics (Phys 486) Syllabus

Taner Edis

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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: 14:00–16:20, Wednesdays: 14:00–15:20. Check my **calendar** to see when might be best (edis.sites.truman.edu/schedule/).

I will be using the web to post course-related notices and documents. Bookmark the course page: edis.sites.truman.edu/thermo/.

2 Course Description

Thermodynamics is one of the most practical areas of physics. It involves macroscopic quantities that are experimentally accessible and described by a mostly familiar mathematical apparatus. And then there is statistical mechanics, which roots thermodynamics in the microscopic and quantum mechanical behavior of vast numbers of particles. This is more conceptually challenging. This course will go deeper into both thermodynamics and statistical mechanics, 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 16:30–17:50, MG 1099.
Wednesday 15:30–16:20, MG 1099.

We will negotiate how we use the Wednesday recitation hour in our first meeting.

4 Course materials

Your textbook will be Daniel V. Schroeder, *Thermal Physics*. 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

We will discuss homework and recitations in our first meeting. Unless we decide otherwise, we will follow the procedure I describe here as a default.

If you prefer a regular set of homework assignments, and want to regularly work on them, they will determine 25% of your final grade. In that case, I will announce an upcoming set of homework problems approximately every week, and tell you the due date.

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 homeworks too similar to each other, especially if they make the same mistakes, you will have some explaining to do.

I care about maintaining academic integrity, and I will apply all Truman policies. See studentinvolvement.truman.edu/handbook/conduct.html for the **Student Conduct Code**.

Before each homework set is due, we will also solve a couple of 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.

6 Exams

The default option is three take-home exams with somewhat lengthy questions, each determining 25% of your final grade. If you prefer another arrangement, ask in class.

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.

7 Final grades

As with every other aspect of the course, I intend to be flexible. 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.

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 stop by my office and ask. I should be able to give you a fair estimate of where you stand.

8 Make-Ups

It is very hard to arrange for make-ups for exams or homework in a course like this. So I expect you will do everything possible to turn your work in on time, and so avoid later hassle for both me and yourself. I post solutions on the course web site; once they are up, it's too late to hand that work in.

Nevertheless, you may find you have missed something because of a legitimate excuse like being badly sick or a death in your family. In this case, come and speak 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 in my office, or something similar.