Course Syllabus

Instructor
Steven van Enk (he/him/his)
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Office: 251 Willamette Hall
Office hours: Mo 10am-11am, 1pm-2pm, or by appointment

TA
Nathan Young (he/him/his)
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Office: 414 Willamette Hall
Office hours Tue 3pm-4pm

Coordinates
Class time: Tuesday, Thursday, noon-1.50pm
Class location: 204 Tykeson Hall

Course description
The goal of this course is to obtain a basic understanding of the key concepts of thermodynamics--energy, entropy, and temperature--and apply these concepts to various "ordinary-life" questions such as

- why does a refrigerator need electric energy to take energy out of cold milk?
- is diamond or graphite the most stable form of carbon?
- what is the "dew point"?
- how does a heat pump reach an efficiency larger than 100%?
- what are the differences between boiling and evaporation (of water, e.g.)?
- why is your breath visible on a very cold day?
- can temperature be negative?

Thermodynamics also is relevant to current science: Biochemistry (really, any of the chemical processes taking place in your cells), Big Bang cosmology, quantum thermodynamics, and condensed matter physics. Actually, the latter really requires you to know Statistical Mechanics, which will be the subject of the follow-up course, PHYS 353, and which is also treated in the same textbook we use in PHYS 352.
**Textbook:** An Introduction to Thermal Physics, by Daniel V. Schroeder. You can find a pdf version of Chapter 1 (under "Files") just in case you're not in time to get the book. The textbook is central to the course, including homework and topics covered in class. Please check out the schedule and the reading assignments below.

**Reading & schedule**

The tentative reading assignments and the schedule are:

- wk 1: preface and sections 1.1--1.3
- wk 2: sections 1.4--1.6
- wk 3: sections 1.7-2.2
- wk 4: sections 2.3--2.4
- wk 5: sections 2.5--3.2
- wk 6: Quiz 1 and Midterm
- wk 7: sections 3.3--3.6
- wk 8: sections 4.1--4.2
- wk 9: sections 5.1--5.3d
- wk 10: sections 5.3d--5.4, Quiz 2

**Grading:**

- homework 25%
- professionalism points 10%
- quiz 1: 10%
- midterm: 20%
- quiz 2: 10%
- final: 25%

Some explanations:

**Homework** will be due on Tuesdays, by midnight. It will be graded quite like Prof. Corwin did in PHYS 351. Out of a 100 points, you get 1/3 for handing in answers to the homework questions, another 1/3 for correcting your answers with the help of the solutions once they are posted and the remaining 1/3 come from your actual grade. Here the TA will do the grading, since especially in the beginning there are no unique correct answers and so it would be harder for you to grade yourself. Do try, though!

Also, I will drop your lowest homework score.

The two **quizzes** and the **midterm** will be done in class, and you will get to prepare and use your own hand written cheat sheet. The quizzes are multiple-choice and are meant to prepare you for the midterm and the final, respectively. The quizzes are planned for Tuesday, the first hour, and we'll discuss the quiz during the second hour. That way should help you identify weak spots for the midterm on the Thursday right after the quiz, and for the final. The midterm and final are not multiple-choice questions; you will have to show how you derived your answers.
Converting scores to letter grades:

- 90%-100%: A- to A+
- 75%-89%: B- to B+
- 60%-74%: C- to C+

(I will also curve, and an average score should correspond to a B.)

Professionalism points are about:

- Be on time, prepared and willing.
- Submit timely, quality work. Late assignments will not be awarded credit unless arrangements have been made prior to the due date.
- If you are going to be late or need to miss class due to an illness, religious holiday, or emergency, please notify an instructor in advance by email at least 24 hours prior to the class.
- Silence electronic notifications, and refrain from using your phone for non-class related work during class.
- At times in the course, if there will be discussions on topics that might be considered sensitive to some people, it is important that we establish an atmosphere of safety and mutual respect.
- We will not always all agree, in fact, we will learn better from different viewpoints, but all discussion should be conducted with civility and integrity. This atmosphere of respect should be extended to any guests we have in class, or any time we visit another area of campus.

Reporting Harassment and Discrimination

Both instructor and TA are student-directed employees. For information about our reporting obligations as employees, please see Employee Reporting Obligations (https://investigations.uoregon.edu/employee-responsibilities#employee-obligations) on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing any form of prohibited discrimination or harassment, including sex or gender-based violence, may seek information and resources at safe.uoregon.edu (http://safe.uoregon.edu/), respect.uoregon.edu (https://respect.uoregon.edu/), or investigations.uoregon.edu (https://investigations.uoregon.edu/) or contact the non-confidential Title IX office/Office of Civil Rights Compliance (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help. We are also mandatory reporters of child abuse. Please find more information at Mandatory Reporting of Child Abuse and Neglect (https://hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect).