

Why there is no required textbook

This course has no actual textbook. The only assigned reading is the posted lecture notes, which are usually very close to what you will hear me say and write on the board in lecture.

I choose not to have a textbook for three reasons. On the selfish side, by using my own text (the notes) I have more freedom to decide what topics are important and how much time will go into developing them. Sometimes my lectures get into territory not covered by any textbooks.

The second reason is that I am very critical of the pedagogy and accuracy of most textbooks. For example, one of the most popular thermodynamics textbooks starts with the ideal gas law, which involves the temperature. Temperature is not covered in earlier physics courses and in fact is a fundamental new concept that this course is meant to introduce. The proper definition of temperature is one of the high points of 2218, but don't expect to see it until we've done a great deal of preparation, like learning how to count microstates. Regarding the latter, that same popular thermo book has an incorrect formula for the simplest system, the ideal gas!

Finally, I choose not to have a textbook because I worry about Physics turning into Griffiths. David Griffiths is a fine physicist and one of the best authors of physics textbooks I know. His esteem is so widespread it is highly unusual *not* to use one of his books as the text in introductory physics. I know this from my service on graduate admissions, where applicants — from all over the world — are asked to list their course textbooks. It appears the entire planet is learning physics according to the singularly popular author! You may disagree that lack of diversity in presentation, language, even notation, is necessarily a bad thing. After all, we are talking about very established, noncontroversial stuff. But let's not forget, that some of the biggest advances in physics came from challenging exactly those established, noncontroversial things!