Reading a Textbook

In physics, or in other classes such as chemistry or mathematics, you will likely be using textbooks. Here are some suggestions on how to do so:

1. Read the textbook. This one may seem obvious, but many students only pull out (or in our case, turn on) the textbook when doing homework assignments, or perhaps studying for a test. Reading the textbook beforehand definitely helps: It provides context and more conceptual information. You may not "know what you don't know" if you don't read the textbook. It also provides a sense of what topics are emphasized, or required, even if they do not show up on a test. They may show up on a later test.

2. Understand the basic hierarchy of a text—chapters, lessons, and so on—and the elements that make up a lesson—informational sections, practice problems, summaries, etc. This enables you to digest a "chunk" at a time.

3. Record key vocabulary. Words such as "velocity" will show up over and over in a course such as physics. Yes, a search engine can define a term for you, but you cannot follow an argument in a text, or in a classroom, if you are constantly searching for words. The purpose of writing down the key words is so that you know them.

4. Learn to work with equations and essential variables. If equations come naturally to you, great. In physics, it's also important to learn key abbreviations (such as PE) which are always defined in cards. There are also symbols, such as for delta, that you must know.

5. Be able to solve an equation for another variable, e.g., since V = IR, what does I equal in terms of the other variables? There is material on this in the text if you need it.

6. Understand key ideas in graphs. Be able to plot a scatter plot; understand what a trend line is; understand the types of correlation; know what a parabola looks like.

7. Work though the sample problems and QuickChecks. Just glancing at a sample problem does not mean you can do it. Try answering the problem—stop when you get to where calculations are needed. The sample problems are illustrations of typical test questions, and also reflect the essential ideas. QuickChecks are similar—test yourself.

8. Present material to others. This will vary by class, but whether it's in a paper or a classroom discussion, check your understanding by being able to state it in your own words.

9. Write down (briefly) what you think the key ideas are in a lesson, then compare that to the summary. Your notes can be brief (e.g., "Energy is conserved = constant in isolated system"), but this and the practice problems are a couple of checks to see if you are getting the essential ideas. If you miss on something, go back—and also see "is there a pattern?"—and address that deficiency.

10. Check your understanding of the major ideas in the book versus yours. These are the ideas that we think are developed in one part of the book, and used in other parts. Does your idea of a chapter summary match the summary that is presented?