SAVE THIS!

Horowitz & Hill is not a great textbook, but we've forced you to suffer through it because it *is* a great reference book that will be useful for you in the future.

Check out the appendices! There is also a 21-page index (updated 33-page index available on the course website: http://www.physics.wisc.edu/undergrads/courses/fall2018/623/) and a nice 4-page annotated bibliography. Use them.

Things that we haven't covered in class you will need someday:

Filters (Chapter 6)
Power supplies (Chapter 9)
Microcontrollers (Chapter 15)

And some still useful stuff from the old second edition (pdf available on the course website) that got left out of the 3rd:

1. Construction Techniques:	Chapter 12
2. Radiofrequency and high speed circuits:	Chapter 13
3. Low-Power Circuit techniques:	Chapter 14
4. Transducers and Signal Processing:	Chapter 15

The "X-chapters" volume has just come out! (But I haven't seen it yet.)

The book cannot stay up-to-date, of course, but we've tried to show you how to use data sheets to find properties of new devices. A good way to find out "what's available that might do what I want" is to read the *advertisements* in the various electronics trade magazines that are circulated widely and freely, so you'll probably find them lying around your department somewhere. EDN (Electronics Design News) is one of the best. Also see Appendix M in H&H. Note that most of the articles are written by manufacturer's representatives, so can hardly be considered objective and are often poorly written. The IC manufacturers also put out "Application Notes" — usually available from their websites — that show suggested applications for their latest devices in considerable detail. These are usually very good and are written to be instructive about the details of the application. Look through the lists of titles of these for something that might apply to what you're trying to do. Many manufacturer's websites also have "part finders", where you can enter ranges for critical parameters, and it will give you a list of parts that meet these criteria. In the end, you always have to look at the data sheets to make sure it's what you want. See Appendix N.

Also see the "miscellaneous electronics tips" folder on the Ph 623 website. This has assorted useful articles on different topics. Hopefully the file names are sufficiently descriptive to see which ones are of interest. Note that there are several articles on aspects of "grounding." Some of you ran into problems with this just on your breadboards, but every time you work on a larger system you'll spend a lot of your time on grounding issues. It's not [entirely] black magic, so read some of these when the time comes.

If you want to do your own simulations, a good free download is LTspice XVII, Analog Devices' version of SPICE, with schematic capture interface. This is pretty much analog-only. It is compatible with component libraries from other manufacturers. The Windows UI is similar to Multisim. The Mac version takes some getting used to (Google for tutorials.) There is a writeup on LTspice by Kael Hansen on the website. Also see Appendix J in H&H. KiCad is good for PC board layout.

Physics 623 comes with 5 years of free consulting. So I'll try to help if you run into an electronics problem in your research.