Beginner's guide to LaTex for UNSW School of Physics assignments

This document is a brief primer on how to get started with LaTex to write up and submit your physics assignments in online/electronic form.

LaTeX has a slightly steep learning curve but is also very rewarding once you learn it. It makes the preparation of professional looking documents with equations, figures and tables fast and easy. And if you can type faster than you can write (most people today), then it means you can more efficiently add explanations to your assignments. Good explanations can be key to earning higher marks in assessments.

If you stay on in physics to honours, Ph.D. and beyond, you'll find yourself using LaTeX a lot. It's preferred by most physics journals. Getting a start early in your career will mean you're more experienced when the time comes you really need it.

There are two key components to a LaTeX installation on any platform you choose: The LaTeX compiler/package and an appropriate editor.

LaTeX compiler/package: For windows, I highly recommend MiKTeX but TeX Live is an alternative. For mac, you will want MacTex. For Linux (if you're a linux user you probably don't even need to read this document ☺) it is probably built-in already, if not, TeX Live is a good option also. Conventional wisdom has it that it's smartest to install the compiler first so the editor hooks up properly.

LaTeX editor: There are dozens of good options here. The best free options are probably Texmaker and TexStudio, but TeXworks is another good alternative that comes included in both the MiKTeX and TeX Live installation. Other common editors are WinEdt ($) and emacs (free and a bit old school). The trickiest bit of editor installation can be getting it to hook up with your compiler properly. This is much easier than it was in the past, and mostly involves making sure the editor settings for the compiler point to the correct folder location for the compiler.

Test it out: The first thing you might want to do is run a check everything is working using the assignment template, which you download in 'ready to compile' form. Open the file *UNSW-SoP_Report_template.tex* in your editor, and compile it using the PDFLatex option (you'll need this as the images are not .eps format). The compile should generate a PDF document *UNSW-SoP_Report_template.pdf* that looks like *UNSW-SoP_Assignment_Report_compiled.pdf*. If you do, then everything works. Your LaTeX compiler might stop to download some of the packages needed (e.g., graphicx) along the way hopefully, if not, you might need to install manually (see documentation for your compiler – MiKTeX should pull packages 'on the fly' though).

Debugging: Once you edit a .tex file, you might get errors on compiling. Usually the compiler will tell you at least where it got stuck, but bear in mind the problem can be located earlier in the text, i.e., you dropped a $ or) further back, but this is where it sees the problem arising. Most compiler errors are simple omissions or typos. Some occasionally can be more troublesome, but often solved with some help online. By far the best resource for help with LaTeX is the online bulletin board http://tex.stackexchange.com. A well worded search for the error on google will often send you there.

Good luck: From here, feel free to play around, but one last tip. Version control on documents can be very useful. I use filenames with version numbering, e.g., *name_V1.tex*, and often update the number at last version that compiled well. This often helps in debugging as you can always go back to the last compilable version, find out what changed since, and focus on that. Try to compile semi-regularly so you don't accumulate mountains of errors to fix. Once you get the hang of things with LaTeX, you'll never want to go back to Word's horrible equation editor, I promise. ☺