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Introduction to LaTeX

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LaTeX is powerful word-processing software for the preparation of scientific documents and presentations. There is a learning curve with LaTeX but it is not too steep. This handout is designed to help you to start using LaTeX on your personal laptop and various computers around campus.

LaTeX basics. On the course website I have posted a standard template that will be helpful. You can find many helpful sites using a standard search engine. (To avoid arriving at dubious internet locations, you may want to be slightly more specific than simply searching for "latex"!)

Document preparation in LaTeX has two components:

- **Editing.** This works in essentially the same way on all operating systems (see below). Text is added to - and deleted from - a document using a standard text editor. This process is similar to writing a computer program in a high-level language. There is a list of commands that produce symbols, or encode display properties. You will pick up the few commands you need as you go; the template should help you to get started. Files you create should be saved as `.tex` file types.
- **Typesetting.** This process converts the LaTeX source (the `.tex` file) into the nice document that you see (this handout for example). You are effectively running the "program" that you have written in the LaTeX language, and the output is a pretty document. In fact, it will quite often be the case that there are syntax errors in the `.tex` file that prevent the typesetter from completing its task (bugs in the program); these must be corrected before you can view the nice document. Typesetting produces auxiliary files that enable you to view and print your document (for example `.dvi` and `.pdf` file types).

Preparing LaTeX documents on Bucknell computers. You have several options for preparing LaTeX documents in computer labs on campus. There are some differences depending on the operating system that you use.

- **Unix/Linux.** LaTeX is installed on `linuxcomp3`, on which you all have accounts. To prepare the `.tex` file you can use any text-editor you like (I use *Emacs*, for example). To typeset the file *filename*`.tex`, use a terminal to navigate to the directory / folder containing this file. Now type

  `latex` *filename*`.tex`

  This will produce several auxiliary files, including *filename*`.dvi`. You can view the typeset file by typing

  `xdvi` *filename*`.dvi &`

  Now, as you edit *filename*`.tex`, you can re-typeset in the same terminal window and the changes you make will automatically display. You can also produce `.pdf` file types directly from the LaTeX source by typing

`pdflatex` *filename*`.tex`

If you wish to use linux but you do not know your password for `linuxcomp3`, you can set this up at the Tech Desk, at Mike Harvey's office (Dana 215), or at Jeremy Dreese's office (Dana 219).

- **Mac-OS.** There is an integrated LaTeX package for Macs called *TeXShop*. In this package, there is a **Typeset** button at the top of the editor window, and it automatically produces `.pdf` file types. This software is not, however, installed on the machines in the two Mac labs on campus. If you would really like to use a desktop mac in one of these two labs, let me know and I will try to get *TeXShop* installed.

- **Windows.** There is a similar package for *Windows*, called *VTeX*, which is installed on the PCs in the computing labs in the basement of Rooke Chemistry Building. In fact, I understand that it has been installed on all PC labs at Bucknell. I am not so familiar with *Windows*, but I can easily help you get started if you want to use a PC to prepare LaTeX documents.

- **Laptops.** If you have a personal laptop then you can install LaTeX free of charge. For Macs you can download *TeXShop* from

  `http://www.uoregon.edu/~koch/texshop/`

  If you run *Linux* or *Windows* you might consider TexMaker for all your LaTeXneeds; it can be found here

  `http://www.xm1math.net/texmaker/`

  Once again, I am not so familiar with *Windows* but there are various options, just in case. You might consider *MiKTeX*, which can be downloaded from

  `http://miktex.org/`

  There is a suitable front-end text editor called *TeXnicCenter* that can be downloaded from

  `http://www.texniccenter.org/`