

# Some L<sup>A</sup>T<sub>E</sub>X Basics

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- L<sup>A</sup>T<sub>E</sub>X is a document preparation system that produces publication-quality documents. It is extremely useful for typing mathematical symbols. You may find a useful L<sup>A</sup>T<sub>E</sub>X tutorial at:  
<http://frodo.elon.edu/tutorial/tutorial/index.html>.
- On a Mac you will be using the program TeXShop. TeXShop can be found under the math applications. When you open TeXShop you will see a blank document. Once you have put in the necessary components of the document, you click on Typset in the upper left-hand corner. A console will open up that shows you any errors you may have. If there are no errors TeXShop will show you what your document looks like.
- Typesetting your document creates pdf, log, and aux files. The only files you need to keep are the tex file and the pdf. You will notice on the console that comes up during typesetting that there is an option to Trash Aux Files. This will get rid of the unnecessary files.
- To create a document you must first specify a document type. You do this by typing

```
\documentclass{}
```

and entering the type in curly braces. More than likely, you will be using the article, amsart, or siamltex class. To use siamltex you will need to download some files. These can be found at:

<http://www.siam.org/journals/auth-info.php>. You need to save these files in your working folder.

- The preamble is the part of the document that comes after the documentclass command and before the start of the body. If you wish to create a title for your document, you include the following in the preamble:

```
\title{Type title here}
\author{Author}
\date
```

$\LaTeX$  will put in the current date unless you specify differently.

- You must then tell  $\LaTeX$  to begin the document and end it.

```
\begin{document}
Type document here.
\end{document}
```

At the bare minimum, you must provide the document class and tell  $\LaTeX$  where to begin and end.

- Once you have told  $\LaTeX$  to begin the document, to display the title you use the command

```
\maketitle
```

- To create an abstract, you use the abstract environment. This should be done after the title. You type the following:

```
\begin{abstract}
Type abstract here.
\end{abstract}
```

- Generally, when typing commands, required information goes in curly braces ({} ) and optional information goes in square brackets ([ ]).
- You will have noticed that commands are preceded by a backslash.  $\LaTeX$  will create sections for you. The sections will be numbered, and you may give them titles. The command is as follows:

`\section{Type section title here.}`

If you don't want the sections numbered, then type an \* after the word section.

- You may wish to have a table of contents to keep track of the sections. If you want a table of contents, you type a backslash followed by `tableofcontents`. You must type this before the abstract.
- If you wish to type a mathematical symbol and/or formula in-line, you place the text between dollar signs. For example,

`$$\frac{x}{y}$$`

creates  $\frac{x}{y}$ . I will provide you with a list of some useful math commands.

- To create a centered math formula on a separate line, you type the commands between double dollar signs. For example,

`$$x^2+\sin x.$$`

will result in the following:

$$x^2 + \sin x.$$

- Often you may want to type several formulas or inequalities and align them. This is done using the `eqnarray` environment. When using this environment you do not need to use dollar signs.

```
\begin{eqnarray}
5(y - 2) &=& x - 3 \\
5y - 10 &=& x-3 \\
5y &=& x + 7 \\
y &=& \frac{1}{5}(x + 7)
\end{eqnarray}
```

The above code results in:

$$5(y - 2) = x - 3 \tag{1}$$

$$5y - 10 = x - 3 \tag{2}$$

$$5y = x + 7 \tag{3}$$

$$y = \frac{1}{5}(x + 7) \tag{4}$$

Notice that each line is numbered. You may type an \* after eqnarray to get rid of the numbering. The symbol & on either side of the equals sign tells L<sup>A</sup>T<sub>E</sub>X how to align the equations. The double backslashes tell L<sup>A</sup>T<sub>E</sub>X that the line is complete. Inside the eqnarray environment, you may enter text by using the following command:

```
\mbox{Enter text here.}
```

- See the attached list of useful commands and environments.

## References

- [1] <http://frodo.elon.edu/tutorial/tutorial/index.html>