Introduction to LaTeX

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1 Class Examples (Command by Command)

This handout goes over using TeXnicCenter (Windows), TeXWorks (Win/Mac) or TeXShop (Maintosh) to create two simple LaTeX documents. The examples are done here on a step-by-step basis. So you if get lost, check this sheet. The LaTeX system, TeXnicCenter, TeXWorks or TeXShop can be downloaded from `www.tug.org` and more information on their installation at Iowa State can be found at: `http://css.ait.iastate.edu/Tex/installation.html`.

1.1 First Class Example

1. *Start your LaTeX system*: Start TeXnicCenter by going under **Start** → **All Programs** → **TeXnicCenter** → **TeXnicCenter**. Or you can start TeXWorks by going under **Start** → **All Programs** → **MikTeX** → **TeXWorks**. On a Macintosh, simply click on the **TeXShop** or **TeXWorks** icons which are either on the **Dock** or in the **Applications folder**.

2. *Open a File*: Pull down under **File** → **New** or **Open**.

3. Enter the following file:

```
\documentclass{article}
\begin{document}
You can put anything you want here.
Go ahead, be creative.
Write and express yourself.

See that wasn't so bad, was it.
\end{document}
```

You can move around the editing screen with the arrow keys or the mouse and delete things with the delete key.

4. *Save the File*: Pull down under **File** → **Save As**. Save the file to your Desktop with the name **first.tex**.

5. *Compile your document with PDFLaTeX*: Within TeXnicCenter make sure your *Output Profile* is set to **LaTeX ⇒ PDF**, then compile your document by clicking the **Build button**. Within TeXWorks, again make sure your compiler is set to PDFLaTeX then click the **Typeset** button at the top on the far left. If you are using TeXShop, simply click on the **Typeset** button— the TeXShop software only uses the PDFLaTeX compiler. If all went well, a PDF file should have been created. If an error message pops up, edit the file which contains the error and then re-compile.

6. *Take a look at the result*: Within TeXnicCenter, use the **View Output button** to view the current state of your document. Within TeXShop or TeXWorks, a PDF file should automatically appear. You can also just double-click the **first.pdf** file on your desktop to view your result.

7. During class, alterations to this document and other things you can try will be suggested for this file. To do this, go back to editing your file, make your changes, save, re-compile then continue on from there.

1.2 Second Class Example

1. *Start your LaTeX system*: Start TeXnicCenter by going under **Start** → **All Programs** → **TeXnicCenter** → **TeXnicCenter**. Or you can start TeXWorks by going under **Start** → **All Programs** → **MikTeX** → **TeXWorks**. On a Macintosh, simply click on the **TeXShop** or **TeXWorks** icons which are either on the **Dock** or in the **Applications folder**.

2. *Open a File*: Pull down under **File** → **New** or **Open**.

3. Enter the following file:

```
\documentclass{book}
\begin{document}
\title{Creativity, Wit and Wisdom}
\author{Joe Struss}
```

```
\maketitle
You can put anything you want here.
Go ahead and be creative.
Write and express yourself.

Remember, the concepts and realities
of tomorrow are the creative ideas of today.
\end{document}
```

You can move around the editing screen with the arrow keys or the mouse and delete things with the delete key.

4. *Save the File*: Pull down under **File** → **Save As**. Save the file to your Desktop with the name **second.tex**.

5. *Compile your document with PDFLaTeX*: Within TeXnicCenter make sure your *Output Profile* is set to **LaTeX ⇒ PDF**, then compile your document by clicking the **Build button**. Within TeXWorks, again make sure your compiler is set to PDFLaTeX then click the **Typeset** button at the top on the far left. If you are using TeXShop, simply click on the **Typeset** button— the TeXShop software only uses the PDFLaTeX compiler. If all went well, a PDF file should have been created. If an error message pops up, edit the file which contains the error and then re-compile.

6. *Take a look at the result*: Within TeXnicCenter, use the **View Output button** to view the current state of your document. Within TeXShop or TeXWorks, a PDF file should automatically appear. You can also just double-click the **first.pdf** file on your desktop to view your result.

7. During class, alterations to this document and other things you can try will be suggested for this file. To do this, go back to editing your file, make your changes, save, re-compile then continue on from there.

2 Spell Checking

Within TeXnicCenter, pull down under **Tools** → **Spelling** to check your spelling. Within TeXWorks on a Windows system, pull down under **Edit** → **Spelling** → **en_US** to have your spelling checked as you type. Within TeXShop, pull under **Edit** → **Spelling Check**.

Within TeXWorks on a Mactinosh system, pull down under **Edit** → **Spelling** but by default no standard dictionary is installed. To install a standard dictionary for the Macintosh version of TeXWorks go to: `http://code.google.com/p/texworks/wiki/SpellingDictionaries` and follow the installation directions there.

3 Additional LaTeX Information

Additional LaTeX information and some excellent LaTeX Web links can be found on the ISU TEX Web page: `http://css.ait.iastate.edu/Tex/` This includes a local LaTeX FAQ as well as some local style files and local example files. The International Tex User's Group (TUG) Web site: `http://www.tug.org` contains complete TeX/LaTeX information and documentation.

4 Top Ten Solutions To Common LaTeX Problems

1. Normally use the article, book or report documentclass (or the slides documentclass for overhead slides).

2. Leave a blank line to start a new paragraph. Use `\noindent` before a paragraph to get a paragraph without paragraph indentation.

3. Watch out for special characters as listed in standard LaTeX documentation. Usually you just put a backslash \ in front of the special character to get the character you want. (Exception: + = | ><; all require $ signs around them.)

4. For double-quotes in LaTeX, use two left single quotes ‘‘ to start your quoted statement and two right single quotes ’’ to end your quoted statement.

5. Use a tilde ~ (sticky space) after words such as Mr. or Mrs. or Dr. to prevent line breaking and use \ after a period that does not end a sentence and is not after an uppercase letter.

6. To use different font styles and sizes, like a bold or a tiny character: enclose the area for the change in braces and use a command from the standard LaTeX font size list after the first brace to get the change that you want. For example: `{\tiny dog}` which gets you a tiny dog.

7. Do not underline items in LaTeX use emphasis `\emph{item}` instead.

8. Enter math mode with a `$` then use a `^` to get a superscript and `_` to get a subscript. Use `{}` to group items together in a superscript or subscript— for example: `$a^{34}$` $\rightarrow a^{34}$ or `$b_7$` $\rightarrow b_7$. Remember to leave math mode with another `$` before you continue on.

9. You can divide your paper into parts by using the following sectioning commands: `\chapter` (not available in article), `\section`, `\subsection`, `\subsubsection`, `\paragraph`, and `\subparagraph`.

10. Use `\ ` or `\space` to put in a required blank into your document or use `\hspace` or `\vspace`; for example: `\vspace{1 in}`— to add horizontal or vertical space within your document. You must have something on a page before you can do a `\vspace` so if necessary do a `\space` followed by a `\vspace`. You can also use `\hspace*` or `\vspace*` to force horizontal or vertical space into a document. Use `\newpage` to force LaTeX to go to a new page in your document.

5 References

- *LaTeX User's Guide and Reference Manual* by Leslie Lamport. Standard LaTeX manual with lots of useful information. A little expensive because it is the "official" LaTeX book.

- *A Guide to LaTeX* by Helmut Kopka and Patrick W. Daly. Great less expensive LaTeX book that covers both standard LaTeX and gets into some excellent LaTeX information regarding graphics and the tabular environment.

- *The LaTeX Companion* by Goosens, Mittelbach and Samarin. The "official" follow-up guide to Lamport's book. Terrific information on LaTeX packages but still a little pricey.

- **Local Works** from: `http://css.ait.iastate.edu/Tex/classes.html` which include: *Writing a Paper with LaTeX* and *The isuthesis Package* by Joe Struss. All free to download and the "Writing a Paper with LaTeX" document has a series of fairly complicated math examples, a foreign language example and a LaTeX-style Powerpoint example.