

Math 291: Lecture 2

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1 *The Preamble*

2 *Document Classes and Options*

3 *Packages*

4 *Page Layout*

5 *Fonts and Symbols*



Outline

1 *The Preamble*

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- As was mentioned last week, everything located above the `\begin{document}` command is called the “preamble” of the document. The commands in the preamble define the overall structure of your \LaTeX document
- The first part of the preamble is (usually) the command `\documentclass[options]{class}`.
- The next part of the preamble is (often) the command `\usepackage[options]{package, package, ...}`.
- Next there is (often) a set of commands that define the page layout
- Finally, one can use the command `\newcommand{ \<name>}{<definition>}` to create a shorter name for a frequently used command



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Document Classes

The most common document classes are:

- article
- proc (meaning “proceedings”)
- report
- book
- slides
- letter

But there are many others...



Document Class Options

Several options can be used to modify a document class. These include:

- 10pt, 11pt, or 12pt (sets the general font size for the document)
- letterpaper, legalpaper, a4paper, a5paper, or b5 paper (sets the paper size for the document)
- one column or two column (sets the number of columns that are typeset)
- landscape (set the page layout to landscape rather than the standard page orientation)
- and many others . . .



Getting Started on an Example

- Open a blank document using TeXnicCenter and type
`\documentclass{article}`
- Add the options 12pt and letterpaper to your document class. It should read:
`\documentclass[12pt, letterpaper]{article}`
- Next, add the commands
`\begin{document}`
 and
`\end{document}`
- Then add the text:
 This is my second `\LaTeX` document.
- Save your document somewhere convenient. Compile it using the
 $\text{\LaTeX} \Rightarrow \text{PS} \Rightarrow \text{PDF}$ build profile and open the resulting .pdf file.



Modifying Our Example

- Change the options to 10pt and a5paper. It should read:


```
\documentclass[10pt, a5paper]{article}
```
- Then add the text: I am continuing to write so that we can see how wide the page is. If I write enough, I will get to the end of the line.
- Recompile and view your document.
- Then change the options back to 12pt and letterpaper and compile and view again.
- Finally, add the two column option. It should read:


```
\documentclass[12pt, letterpaper, two column]{article}
```

Then compile and view it (you should close your previous .pdf file before recompiling).
- Note that you only see text in the first of the two columns because the left column has not been filled yet.



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Using Packages

- Change your documentclass options back to:
`\documentclass[12pt, letterpaper]{article}`
- In between the
`\documentclass`
 and
`\begin{document}`
 commands, add the following:
`\usepackage{amsmath, amssymb, amsfonts, bm, latexsym, color}`
- Compile your document. TeXnicCenter should be set up so that it will find and install any missing packages. Let me know if you have trouble compiling. It might take a while for these packages to install.
- These packages give you access to additional fonts, symbols, or other additional commands.



Adding Packages

- You can also add packages manually using the MiKTeX Package manager.
- To find the Package Manager, click on the Windows button, then find “MikTeX 2.9” in the Program menu.
- Click on “Package Manager (Admin)” and authorize it to make changes.
- Once the Package Manager opens, open the “Repository” menu tab, and click on “Change Package Repository”
- Select “Packages shall be installed from the internet” and click “Next”
- Scroll down to your favorite US based repository and select it (probably a US based one).
- To practice adding a package by hand, type “tikZ” as either a name or keyword and click “Filter” .
- Click on a package that looks interesting. Then click the “+” button and “OK” . The package should then install itself.
- Close the Package Manager.



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Page Layout Commands

- The commands that determine the page layout for your document are usually put in after the

```
\usepackage
```

commands and before the

```
\begin{document}
```

command.

- Common commands that are used are:

- `\textheight`

- `\textwidth`

- `\topmargin`

- `\oddsidemargin`

- `\evensidemargin`

- The standard syntax used is:

```
\setlength{\textwidth}{<measurement>}
```

where you provide a measurement in inches, centimeters, or millimeters, etc.



A Page Layout Example

- In your practice document, enter the following page specifications:
 - `\setlength{\textheight}{221mm}`
 - `\setlength{\textwidth}{140mm}`
 - `\setlength{\topmargin}{-10mm}`
 - `\setlength{\oddsidemargin}{10mm}`
 - `\setlength{\evensidemargin}{10mm}`
- Take some time to play with these numbers and see what impact changing these has on your practice document.



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Fun With Fonts

- In your practice document, add the following:
 - `\textsl{MATH}` is Cool.
 - `\textsf{MATH}` is Cool.
 - `$$\mathbb{MATH}$$` is Cool.
 - `$$\mathcal{MATH}$$` is Cool.
 - `\textcolor{red}{MATH}` is Cool.
 - `\textcolor{red}{M}\textcolor{yellow}{A}\textcolor{green}{T}\textcolor{blue}{H}` is Cool.
- There are many other fonts available.



Fun With Symbols Part 1

- TeXnicCenter has several built in symbol menus. You access them by clicking on the “Math” tab on the topline menu and scrolling down to the submenu that has the symbol that you want.
- In your practice document, try each of the following:
 - Use the “Greek Letters” menu to help you create the expression: $\alpha \geq \gamma$
 - Use the “Binary Operators” menu to help you create the expression:
 $A \oplus B = C \times D$
 - Use the “Set” menu to help you create the expression: $(A \cap B) \cup C \subseteq D$
 - Use the “Arrows” menu to help you create the expression: $100\% \Rightarrow \$ \uparrow$
 - Use the “Several Symbols” menu to help you create the expression: $|\mathbb{R}| = \aleph_1?$



Fun With Symbols Part 2

- You can customize the clickable symbols available in the top part of the display in TeXnicCenter as follows:
 - Open the “Tools” Menu.
 - Click on “Customize”.
 - In the window that opens, click on the “Toolbars” tab.
 - Check the boxes of the symbol family that you want to add to the display.
 - As an example, add the “Arrows” tab. Then click on it and drag it to a convenient location in the top menu bar.
- You can find a *fairly* comprehensive list of symbols available in \LaTeX by going to the following webpage.
- For a more comprehensive list, see the following webpage.
- Note that to use many of the symbols listed, you will have to call the appropriate package at the beginning of your document.