### Math 291: Lecture 2

#### Presented by Prof. James for Prof. Fagerstrom

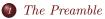
Minnesota State University Moorhead web.mnstate.edu/fagerstrom/ fagerstrom@mnstate.edu

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January 18, 2018 1 / 19

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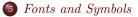




Document Classes and Options







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January 18, 2018

2 / 19

The Preamble





Document Classes and Options





5 Fonts and Symbols

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January 18, 2018 3 / 19

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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.

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# M. The Preamble

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- 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, ...}.
  Note: This can be one command with a list, as shown, or separate commands for each package.

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- Next there is (often) a set of commands that define the page layout.

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- The next part of the preamble is (often) the command \usepackage[options]{package, package, ...}.
  Note: This can be one command with a list, as shown, or separate commands for each 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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#### 1) The Preamble

- Document Classes and Options
  - 3 Packages

#### Page Layout

5 Fonts and Symbols

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3



The most common document classes are:

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January 18, 2018 6 / 19

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The most common document classes are:

- article
- proc (meaning "proceedings")
- report
- book
- slides
- Ietter
- beamer



The most common document classes are:

- article
- proc (meaning "proceedings")
- report
- book
- slides
- letter
- beamer

But there are others...

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: Lecture 2

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Document Classes and Options



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

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January 18, 2018 7 / 19

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

• 10pt, 11pt, or 12pt (sets the general font size for the document)

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January 18, 2018 7 / 19

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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)

## Document Class Options

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- 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)

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

- 10pt, 11pt, or 12pt (sets the general font size for the document)
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- 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)

## 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)
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- landscape (set the page layout to landscape rather than the standard page orientation)

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January 18, 2018

7 / 19

and many others...

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Document Classes and Options

### Getting Started on an Example

• Open a blank document using TeXnicCenter and type \documentclass{article}

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January 18, 2018 8 / 19

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Document Classes and Options

### 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}

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January 18, 2018

8 / 19

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### 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}
- $\bullet$  Next, add the begin and end document commands, and "This is my second  $\mbox{\sc BT}_{E\!X}$  document." as the body of the document.
- Save your document somewhere convenient. Compile it using the  $PTEX \Rightarrow PS \Rightarrow PDF$  build profile and open the resulting .pdf file.

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• Change the options to 10pt and a5paper. It should read: \documentclass[10pt,a5paper]{article}

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- 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.

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January 18, 2018

9 / 19

• Recompile and view your document.

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## 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.

## 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,twocolumn]{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.



1) The Preamble

Document Classes and Options



#### Page Layout

5 Fonts and Symbols

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January 18, 2018 10 / 19

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• Change your documentclass options back to: \documentclass[12pt,letterpaper]{article}

January 18, 2018 11 / 19

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• Change your documentclass options back to:

\documentclass[12pt,letterpaper]{article}

• In preamble, add the following:

\usepackage{amsmath,amssymb,amsfonts,bm,latexsym,color}

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• Change your documentclass options back to:

\documentclass[12pt,letterpaper]{article}

• In preamble, 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... But once a package is loaded once, it stays loaded, so it only takes a while the first time it is built (fortunately).
- These packages give you access to additional fonts, symbols, or other additional commands.

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- 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, then "Maintenance (Admin)".



# 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, then "Maintenance (Admin)".
- Click on "Package Manager (Admin)" and authorize it to make changes.

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- Select "Packages shall be installed from the internet" and click "Next"

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- 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.

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- 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



1) The Preamble

Document Classes and Options





#### 5 Fonts and Symbols

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Page Layout

# Page Layout Commands

- The commands that determine the page layout for your document are usually put in preamble after the \usepackage command.
- Common commands that are used are:

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# Page Layout Commands

- The commands that determine the page layout for your document are usually put in preamble after the \usepackage command.
- Common commands that are used are:
  - \textheight
  - \textwidth
  - \topmargin
  - \oddsidemargin
  - \evensidemargin

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# M. Page Layout Commands

- The commands that determine the page layout for your document are usually put in preamble after the \usepackage command.
- Common commands that are used are:
  - \textheight
  - \textwidth
  - \topmargin
  - \oddsidemargin
  - \evensidemargin
- The standard syntax used is:

\setlength{\textwidth}{7.5in}

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

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# A Page Layout Example

• In your practice document, enter the following page specifications:

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January 18, 2018 15 / 19

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## 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}

# 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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January 18, 2018

15 / 19

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#### 1) The Preamble

Document Classes and Options

#### 3 Packages

#### 🗿 Page Layout

#### 5 Fonts and Symbols

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• In your practice document, add the following (leave a blank line between the commands to put the output in different paragraphs):

January 18, 2018 17 / 19



- In your practice document, add the following (leave a blank line between the commands to put the output in different paragraphs):
  - \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}

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January 18, 2018

17 / 19

{T}\textcolor{blue}{H} is Cool.

• There are many other fonts available.

### **W** 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:

# 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:
  - $\bullet\,$  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:  $100\% \Rightarrow \$ \uparrow$ Note: To get the reserved symbols of % and \$, precede them with a \.
  - Use the "Several Symbols" and "Boundaries" menus to help you create the expression:  $|\Re|=\aleph_1?$

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• You can customize the clickable symbols available in the top part of the display in TeXnicCenter as follows:

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### **W** 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.

### **W** 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.

### **IVI.** Fun With Symbols Part 2

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  - 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

http://artofproblemsolving.com/wiki/index.php?title=LaTeX:Symbols.

- For a more comprehensive list, see the following http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf.
- Note that to use many of the symbols listed, you will have to call the appropriate package at the beginning of your document.

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