Packages and the Header Lecture 4

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- We learned how to make document titles
- We explored various document classes
- ▶ We talked about document structure and organization
- We played around with formatting options such as
 - Margin specifications,
 - Line spacing,
 - ► Text alignment
- We also looked at three ways to create a list

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- ▶ We will look at how LATEX handles package management
- ▶ We will explore some very useful packages
- ▶ We will also go into depth with creating page headers

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Let's create a new document file with the following code:

Document skeleton

\end{document}

```
\documentclass[10pt]{ article}
\title{Packages and the Header}
\ begin { document }
\ maketitle
```

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▶ In LATEX, packages are declared in the preamble by the following code:

Package declaration

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- Packages are essentially dedicated files that give the <u>ATEX</u> compiler an additional set of commands and/or environments.
- They can also specify various formatting and global configurations to achieve a desired effect.
- Packages range from simple and useful to downright eclectic.
- ► To browse a complete list of accessible LATEX packages, visit CTAN, the LATEX database

Customizing

- ► We are already familiar with a few LATEX packages:
 - geometry
 - amsmath
 - amssymb
- ▶ The geometry package allows you to specify all sorts of global document formatting options
- ▶ The amsmath package gives you all of the robust mathematics commands and environments that serve nearly all of your typesetting needs.
- ► The amssymb font package gives you all of the fancy math fonts such as \mathcal{R} , \mathfrak{R} , and \mathbb{R} .

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- ► The amsthm package allows you to declare and specify various theorem environments.
- ➤ To include amsthm with a few types of environments, add the following code to the preamble:

Declaring amsthm

```
\usepackage{amsthm}
\newtheorem{thm}{Theorem}
\newtheorem{lem}[thm]{Lemma}
```

Specifying [thm] for the lemma environment tells the compiler to number lemmas in the same count as theorems.

amsthm code

```
\ begin { thm }
For any set of distinct eigenvalues of a map
or matrix, a set of associated eigenvectors,
one per eigenvalue, is linearly independent.
\end{thm}
```

Theorem

For any set of distinct eigenvalues of a map or matrix, a set of associated eigenvectors, one per eigenvalue, is linearly independent.

▶ In documents, theorems are auto-numbered. This can be suppressed with *

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Another useful set of packages are those that make global font specifications.

One neat example is kpfonts, which provides a complete alternative to the default Computer Modern font.

We can include it as follows:

Declaring kpfonts

 \setminus usepackage { kpfonts }

▶ This will make the global adjustment to the new font.

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- ▶ If you ever wish to typeset humanities or other literary papers with LATEX, you can adhere to your professor's MLA requirements with a combination of mla and other bibliography packages.
- In the preamble, include:

mla preamble

\ documentclass [12pt , letterpaper] { article } \usepackage{ifpdf,mla,hyperref} \usepackage[american]{babel} \usepackage[style=mla,backend=biber]{biblatex}

- ▶ The babel package is used for compatibility with international compilers.
- biblatex is a references package which we will explore in later lectures.

Including the mla packages automatically sets your font to a Roman font.

Inside of the document environment, include the following code to get the MLA header:

Using mla

```
\begin{mla}{ First}{Last}{ Professor Name} { Class}{DD MONTH 2014}{\emph{ Title}} \end{mla}
```

This will produce the MLA header and format the page numbering.

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► Finally, to format a works cited, use the environment workscited:

Using the workscited environment

```
\begin{workscited}
\bibent Insert MLA citation here.
\end{workscited}
```

- ► This will auto-format the MLA convention of tabbing each secondary line of the reference.
- Using this set-up will allow you to format flawless MLA papers
- ▶ Your teacher will never know the difference!

▶ There are lots of other useful, interesting, or plain silly

► For chemists, one cool package is chemfig, which lets

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 $\left(-[2]H\right)(-[6]H)-C(=[1]0)-[7]H$

chemfig example:

LATEX packages.

you build diagrams:

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▶ The listings package is great for including snippets of code into your document.

lstset{ language=Java } so key words are properly

bolded: Java code

boolean greetings = True; if (greetings) System.out.println("Hello!");

You can set the language default by

▶ In fact, this is how we have been showing LATEX code this whole course!

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```
A very useful package for header and footer
configuration is the fancyhdr package.
```

► This lets you customize your document's header/footer with simple preamble commands:

Example fancyhdr

```
\usepackage { fancyhdr }
```

```
\setminus pagestyle \{ fancy \}
```

```
\Ihead { Left header }
\chead { Center header }
\rhead { Right header }
```

```
\lfoot {\thepage}
```

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➤ You can suppress the horizontal header line by including the code

- ► Likewise, you can suppress the footer line by renewing the \footrulewidth command.
- For ambitious authors, the fancyhdr documentation provides methods for crafting alternating headers and footers for even and odd pages.
- Additionally, you can suppress headers and footers for particular pages (e.g. chapter titles) by using \thispagestyle{empty} underneath the nearest document structure.