

# Just Enough L<sup>A</sup>T<sub>E</sub>X, Week 2

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# Horizontal Spacing

- ▶ `\`, about 1/4 of a space.
- ▶ `\:` about 1/2 a space
- ▶ `\;` about one space.
- ▶ `\quad`= the width of the letter M
- ▶ `\qquad`=  $2\text{\quad}$ .

Use `\`, before differentials as in  $\int f(x) dx$ ; `\int f(x)\,dx`. The space after the  $\int$  sign can be diminished by using `\!`;  $\int f(x) dx$ . Other horizontal space commands are: `\phantom`, `\hspace`, and `\hspace*`. These all have one mandatory argument. Also `\hfill`, `\dotfill` and `\hrulefill`. These have no arguments.

# Vertical Spacing

- ▶ `\smallskip`
- ▶ `\medskip`
- ▶ `\bigskip`
- ▶ `\vspace` and `\vspace*`
- ▶ `\vfill`.

They work in a fashion analogous to the corresponding horizontal space. Here's a `\smallskip`.

The units that can be used for both horizontal and vertical space commands are: mm, cm and in. Other useful lengths are: `\textwidth`, `\textheight`, and `\baselineskip`. Lengths used can be negative and can employ fractions.

# The Structure of a $\text{\LaTeX}$ Source File

There are three parts to a  $\text{\LaTeX}$  source file.

- ▶ the preamble
- ▶ the document
- ▶ the bibliography (optional)

# The Preamble

The first entry in the preamble is `\documentclass{class name}`.

Some choices for *class name* are:

- ▶ `article`
- ▶ `report`
- ▶ `book`
- ▶ `letter`
- ▶ `beamer`

In addition options are available inserter as indicated.

`\documentclass[option1, option2, ...]{class_name}`.

Every `\newcommand` and every `\DeclareMathOperator` must go in the preamble.

# Some Class Options

Not all options are available for all document classes.

- ▶ font size (except beamer): 10pt (default), 11pt, 12pt
- ▶ paper size (except beamer): letterpaper (default), legalpaper, a4paper
- ▶ columns: onecolumn (default), twocolumn
- ▶ sides: oneside (default for beamer, article and report), twoside (default for book)

# Packages

The command `\usepackage{package 1, package 2, ...}`, which loads the packages that extend basic  $\text{\LaTeX}$ , must be in the preamble. A short list of packages is

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- ▶ `amsthm`
- ▶ `url`
- ▶ `graphicx`
- ▶ `setspace`

These and others will be discussed in detail later.

# Title and Date

The command, `\title{Title of Document}`, is used to produce the title of the document on the first page. The command `\date{desired date}` inserts the designated date after the title and author information (See the next slide.) on the first page. If the command is omitted, the current date is inserted. To omit printing any date, type `\date{}`.

# Author Information

Author information is recorded by `\author{author info}` and centered under the title. There are two ways to display an address.

First as indicated to the right, which is accomplished by entering the *author info* as `{Author Name\\Author Dept\\Author Inst\\City, ST, zip}`.

Author Name  
Author Dept  
Author Inst  
City, ST, zip

(The command `\\=\newline` begins a new line.) Second as below

Author Name, Author Dept, Author Inst, City, ST, zip

If the information is too long to fit on one line, the user must insert the new line command(s) where needed.

# Multiple Authors

Multiple authors with the same address can be displayed by putting all names in place of *Author Name*. With different addresses, separate the authors in the *author info* by the command `\and`. If the first display method is desired, each author's information will appear in a separate column and the columns will be centered. If the second display method is desired, each author's information will start on a new line. Again the user must insert the new line commands where they are needed in each address. Method two is preferable for several authors.

# The Body

The body of the document is begun with the command `\begin{document}` followed by the command `\maketitle` (provided a title and author information has been specified in the preamble). Often an abstract is wanted. To include one begin with the command `\begin{abstract}`. Then type the contents of the abstract and finish with the command `\end{abstract}`.  $\LaTeX$  automatically label it as an abstract, lowers the font size and increases the margins on both sides of the page for the abstract.

## Abstract

Here is an example of how an abstract will appear in relation to the remainder of the text of the document.

# Text Divisions

The *document\_class* determines the text divisions available. For *article* class they are:

- ▶ Section
- ▶ Subsection
- ▶ Subsubsection
- ▶ Paragraph
- ▶ Subparagraph

L<sup>A</sup>T<sub>E</sub>X does the formatting and automatically inserts the correct numbers using *counters*. These divisions can be labeled for later reference with the command `\label{reference name}` with `\ref{reference name}`.

# Page Styles

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**myheading** Much the same as `heading` except that the user selects the heading with the command `\markright{heading}` for `oneside` and with the command `\markboth{odd page heading}{even page heading}`.