

L^AT_EX & T_EX

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Document Class, Packages, and Styles

- `\begin{documentclass}[options]{style}`
 - *style*: article report book slides letter
 - *options*: 10pt 11pt 12pt twiside twocolumn titlepage
- `\usepackage[options]{pkg}`
 - *pkg*: amssymb color latexsym graphics makeidx
- `\pagestyle{style}`
 - *style*: plain empty headings myheadings
- `\pagenumbering{style}`
 - *style*: arabic roman alph Roman Alph

Front & Back (Title, Abstract, Contents)

- `\maketitle` Make title (`\title`, `\author`, `\date`)
- `\begin{abstract} ...` Make abstract
- `\tableofcontents` Make table of contents

Displayed Paragraphs

- `\begin{quote} ...` Short displayed quotation
- `\begin{quotation} ...` Long displayed quotation
- `\begin{verbatim} ...` Typewriter font exactly as formatted

Lists

- `\begin{itemize} ...` Bulleted
- `\begin{enumerate} ...` Numbered
- `\begin{description} ...` Labeled (use `\item[lab]`)
- `\begin{list}[label]{spacing} ...` Lots of spacing options
 - `\topsep` Extra vertical space at top of list
 - `\partopsep` Extra length at top if preceded by a blank line
 - `\itemsep` Extra vertical space between items
 - `\parsep` Vertical space between paragraphs within an item
 - `\leftmargin` Distance between environment left margin and the list
 - `\rightmargin` Distance between environment right margin and the list
 - `\listparindent` Extra space for paragraph indent after first in item
 - `\itemindent` Indentation of first line of an item
 - `\labelsep` Separation between label box and first line item text
 - `\labelwidth` Width of the box containing the label

Splitting the Input

- `\input{file}` Read in file
- `\include{file}` Read file unless `\includeonly` overrides
- `\includeonly{files}` Exclude any file in list

Line & Page Breaking

- `\linebreak` Force line break
- `\[len]` Force line break and add vertical space
- `\pagebreak` Force page break (Also see: `\newpage`)
- `\clearpage` Dump all figures and start new page

Boxes

- `\mbox{...}` Put a box around stuff
- `\fbox & \makefbox` Like `\mbox & \makebox` with frame
- `\makebox[wd][pos]{...}` Box with width and position (l, r, c).
- `\raisebox[raise-ht][ht]{text}` Raised typeset box

Paragraphs & Minipages

- `\begin{minipage}[pos]{wd} ...`
- `\parbox[pos]{wd}{...}`

Space & Rules

- `\hspace{len}` Make a horz space. (Use * form to force)
- `\hfill` Infinitely stretchable space
- `\vspace{len}` Make a vert space. (Use * form to force)
- `\hrulefill` Draw horizontal line as long as possible
- `\rule[raise-ht]{wd}{ht}` Draw a blob of ink
- Horz space commands: `\bigskip`, `\medskip`, `\smallskip`
- Math horz space: `\thinspace`, `\medspace`, `\thickspace`

Lengths

- `\newlength{cmd}` Make a new length command
 - `\setlength{cmd}{len}` Set length `cmd` to `len`
 - `\addtolength{cmd}{len}` Add given length to given command
 - `\settowidth{cmd}{text}` Set length of `cmd` to the width `text`
 - `\settoheight{cmd}{text}` Set length of `cmd` to the height `text`
- NOTE: Units can be cm em ex in pc pt mm

Counters

- `\setcounter{ctr}{n}` set counter to value
- `\addtocounter{ctr}{n}` add value to counter

New Commands

- `\newcommand{cmd}[n]{body}` command `cmd` with `n` args (arg vals: #n)

Tabular Environment

- `\begin{tabular}[pos][col-fmt] ...`
 - The `col-fmt` argument specifies lines and column justification:
 - l Left-justified column
 - r Right-justified column
 - c Centered column
 - | Vertical rule
 - @{...} Text or space between columns
 - `\multicolumn{n}{col}{...}` Span `n` columns with format `col`
 - `\hline` Draw horizontal line across the table
 - `\cline{i-j}` Draw horizontal line from col `i` to `j`

Special Symbols

- ¶ \P § \S † \dag ‡ \ddag £ \pounds © \copyright

Figures and tables

- `\begin{figure} ...` Make a floating figure
- `\begin{table} ...` Make a floating table
- `\caption{...}` Make figure or table caption

Package “alltt”

- `\begin{alltt} ...` Typeset like a verbatim block, except that the special symbols `\`, `{`, and `}` have the normal meaning.

Type Size

- `\tiny` • `\scriptsize` • `\Large` • `\footnotesize` • `\small`
- `\normalsize` • `\large` • `\LARGE` • `\huge` • `\Huge`

Type Style

- Paragraph mode
 - `\textrm{...}` Roman
 - `\textit{...}` Italics
 - `\textbf{...}` Bold
 - `\textsc{...}` Caps
 - `\texttt{...}` Type
 - `\textsf{...}` SSrf
 - `\textsl{...}` Slant
- math mode
 - `\mathrm{...}` Roman
 - `\mathit{...}` Italics
 - `\mathbf{...}` Bold
 - `\mathsc{...}` Caps
 - `\mathtt{...}` Type
 - `\mathsf{...}` SSrf
 - `\mathcal{...}` Cal
 - `\Bbb{...}` AMS Black Board Bold

Sectioning

- `\part` • `\chapter` • `\section` • `\subsection`
- `\paragraph` • `\subparagraph` • `\appendix` • `\subsubsection`

Package “graphics” & “graphicx”

- `\scalebox{fac}{...}` Scale by the given factor
- `\rotatebox{ang}{...}` Rotate by the given angle
- `\includegraphics{file_name}` Include graphic into document.

Package “color”

- `\definecolor{clr-name}[mdl]{val}` Define a color
 - The model (`mdl`), is one of:
 - model Name `val`
 - gray single number in [0,1]
 - rgb three numbers ([0-1] separated commas)
- Predefined colors: black, white, red, green, blue, yellow, cyan, magenta
- `\color{clr-name}` Set current color
- `\textcolor{clr-name}{text}` Set `text` color
- `\colorbox[bkgd_clr]{text}` Set `text` background color
- `\fcolorbox[line_clr]{bkgd_clr}{text}` fbox with frame and background color

Cross Reference

- `\label{key}` Assign current counter to `key`
- `\ref{key}` Print value assigned to `key`
- `\pageref{key}` Print page number assigned to `key`

Package “hyperref”

- `\href{url}{text}` Make link, print `text` in document
- `\url{url}` Make link, print `url` with `\texttt`
- `\hypersetup{colorlinks=true}` Color links, don't put them in boxes

Bibliography

- `\cite{label}` Cite the bib entry with the given label
- Example bibliography done by hand:

```
\begin{thebibliography}{MMMMMM}
\pagebreak[0] \samepage{
\bibitem[Weihrauch 00]{KW00}
Klaus Weihrauch (2000)\
\emph{Computable Analysis: An Introduction}\
ISBN 3-540-66817-9\
This book is well written and a fun read\ldots.}
\end{thebibliography}
```

Mathematical Environments

- `$... $` OR `\(... \)` Inline formula
- `$$... $$` OR `\[... \]` Displayed formula
- `\begin{equation} ... \end{equation}` Numbered equation
- `\begin{eqnarray} ... \end{eqnarray}` Numbered array (rcl) of equations

Over & Under Delimiters & Accents

- Over & Under
 - \overline{abc} `\widetilde{abc}` \widehat{abc} \overbrace{abc}
 - \overleftarrow{abc} \overrightarrow{abc}
 - \underline{abc} \underbrace{abc}
- Accents
 - \acute{x} `\acute{x}` \bar{x} `\bar{x}` \breve{x} `\breve{x}` \check{x} `\check{x}` \ddot{x} `\ddot{x}`
 - \dot{x} `\dot{x}` \grave{x} `\grave{x}` \hat{x} `\hat{x}` \tilde{x} `\tilde{x}` \vec{x} `\vec{x}`

Common Math Constructs

- \sqrt{abc} `\sqrt{abc}` • $\sqrt[n]{abc}$ `\sqrt[n]{abc}` • f' `f'`
- $\frac{abc}{xyz}$ `\frac{abc}{xyz}` • $\overset{a}{b}$ `\stackrel{a}{b}`

Stretching math Mode Delimiters

- $\left(\frac{abc}{xyz}\right)$ `\left(\frac{abc}{xyz}\right)`
- $f\frac{abc}{xyz}$ `\left.\int\frac{abc}{xyz}\right\}`

Math Mode Arrays

- $f(x) = \left\{ \begin{array}{l} A \text{ if } x > 1 \\ B \text{ if } x = 1 \end{array} \right.$ `\left[f(x) = \left\{ \begin{array}{l} A & \text{\if } x > 1$ \\ B & \text{\if } x = 1$ \end{array} \right. \right]`

