LATEX 2ε Cheat Sheet

Document classes

book   Default is two-sided.
report   No \part divisions.
article   No \part or \chapter divisions.
letter   Letter (?).
slides   Large sans-serif font.

Used at the very beginning of a document:
\documentclass{*class*}. Use \begin{document} to start contents and \end{document} to end the document.

Common documentclass options

10pt/11pt/12pt   Font size.
letterpaper/a4paper   Paper size.
twocolumn   Use two columns.
twoside   Set margins for two-sided.
landscape   Landscape orientation. Must use dvips -t landscape.
draft   Double-space lines.

Usage: \documentclass[*opt,opt*]{*class*}.

Packages

fullpage Use 1 inch margins.
anysize   Set margins: \marginsize{*l*}{*r*}{*t*}{*b*}.
multicol Use *n* columns: \begin{multicols}{*n*}.
latexsym Use LATEX symbol font.
graphicx Show image: \includegraphics[width=*x*]{*file*}.
url   Insert URL: \url{*http://...*}.

Use before \begin{document}. Usage: \usepackage{*package*}.

Title

\author{*text*}   Author of document.
\title{*text*}   Title of document.
\date{*text*}   Date.

These commands go before \begin{document}. The declaration \maketitle goes at the top of the document.

Miscellaneous

\pagestyle{empty}   Empty header, footer and no page numbers.
\tableofcontents   Add a table of contents here.

Document structure

\part{*title*}   \subsubsection{*title*}
\chapter{*title*}   \paragraph{*title*}
\section{*title*}   \subparagraph{*title*}
\subsection{*title*}

Use \setcounter{secnumdepth}{*x*} suppresses heading numbers of depth > *x*, where chapter has depth 0. Use a *, as in \section*{*title*}, to not number a particular item—these items will also not appear in the table of contents.

Text environments

\begin{comment}   Comment (not printed). Requires verbatim package.
\begin{quote}   Indented quotation block.
\begin{quotation} Like quote with indented paragraphs.
\begin{verse}   Quotation block for verse.

Lists

\begin{enumerate}   Numbered list.
\begin{itemize}   Bulleted list.
\begin{description} Description list.
\item *text*   Add an item.
\item[*x*] *text*   Use *x* instead of normal bullet or number. Required for descriptions.

References

\label{*marker*}   Set a marker for cross-reference, often of the form \label{sec:item}.
\ref{*marker*}   Give section/body number of marker.
\pageref{*marker*} Give page number of marker.
\footnote{*text*}   Print footnote at bottom of page.

Floating bodies

\begin{table}[*place*]   Add numbered table.
\begin{figure}[*place*]   Add numbered figure.
\begin{equation}[*place*]   Add numbered equation.
\caption{*text*}   Caption for the body.

The *place* is a list valid placements for the body. t=top, h=here, b=bottom, p=separate page, !=place even if ugly. Captions and label markers should be within the environment.

Text properties

Font face

Command	Declaration	Effect
\textrm{*text*}	{\rmfamily *text*}	Roman family
\textsf{*text*}	{\sffamily *text*}	Sans serif family
\texttt{*text*}	{\ttfamily *text*}	Typewriter family
\textmd{*text*}	{\mdseries *text*}	Medium series
\textbf{*text*}	{\bfseries *text*}	**Bold series**
\textup{*text*}	{\upshape *text*}	Upright shape
\textit{*text*}	{\itshape *text*}	*Italic shape*
\textsl{*text*}	{\slshape *text*}	*Slanted shape*
\textsc{*text*}	{\scshape *text*}	SMALL CAPS SHAPE
\emph{*text*}	{\em *text*}	*Emphasized*
\textnormal{*text*}	{\normalfont *text*}	Document font
\underline{*text*}		Underline

The command (t*ttt*) form handles spacing better than the declaration (t*ttt*) form.

Font size

\tiny   tiny
\scriptsize scriptsize
\footnotesize footnotesize
\small   small
\normalsize normalsize
\large   large
\Large   Large
\LARGE   LARGE
\huge   huge
\Huge   Huge

These are declarations and should be used in the form {\small ...}, or without braces to affect the entire document.

Verbatim text

\begin{verbatim}   Verbatim environment.
\begin{verbatim*}   Spaces are shown as ␣.
\verb!text!   Text between the delimiting characters (in this case '!') is verbatim.

Justification

Environment	Declaration
\begin{center}	\centering
\begin{flushleft}	\raggedright
\begin{flushright}	\raggedleft

Miscellaneous

\linespread{*x*} changes the line spacing by the multiplier *x*.

Text-mode symbols

Symbols

&	\&	_	_	...	\ldots	•	\textbullet
$	\$	^	\^{}	|	\textbar	\	\textbackslash
%	\%	~	\~{}	#	\#	§	\S

Accents

ò	\'o	ó	\'o	ô	\^o	õ	\~o	ō	\=o
ȯ	\.o	ö	\"o	ǫ	\c o	ŏ	\v o	ő	\H o
ç	\c c	o̜	\d o	o̲	\b o	o͡o	\t oo	œ	\oe
Œ	\OE	æ	\ae	Æ	\AE	å	\aa	Å	\AA
ø	\o	Ø	\O	ł	\l	Ł	\L	ı	\i
J	\j	¡	~`	¿	?`				

Delimiters

'	`	"	``	{	\{	[	[	(	(	<	\textless
'	'	"	''	}	\}	]	]	)	)	>	\textgreater

Dashes

Name	Source	Example	Usage
hyphen	-	X-ray	In words.
en-dash	--	1–5	Between numbers.
em-dash	---	Yes—or no?	Punctuation.

Line and page breaks

\\   Begin new line without new paragraph.
*   Prohibit pagebreak after linebreak.
\kill   Don't print current line.
\pagebreak Start new page.
\noindent   Do not indent current line.

Miscellaneous

\today   September 15, 2021.
$\sim$ Prints ∼ instead of \~{}, which makes ˜.
~   Space, disallow linebreak (W.J.~Clinton).
\@.   Indicate that the . ends a sentence when following an uppercase letter.
\hspace{*l*} Horizontal space of length *l* (Ex: *l* = 20pt).
\vspace{*l*} Vertical space of length *l*.
\rule{*w*}{*h*} Line of width *w* and height *h*.

Tabular environments

tabbing environment

\= Set tab stop.   \> Go to tab stop.

Tab stops can be set on "invisible" lines with \kill at the end of the line. Normally \\ is used to separate lines.

tabular environment

```
\begin{array}[pos]{cols}
\begin{tabular}[pos]{cols}
\begin{tabular*}{width}[pos]{cols}
```

tabular column specification

l	Left-justified column.
c	Centered column.
r	Right-justified column.
p{width}	Same as \parbox[t]{width}.
@{decl}	Insert decl instead of inter-column space.
|	Inserts a vertical line between columns.

tabular elements

\hline	Horizontal line between rows.
\cline{x-y}	Horizontal line across columns x through y.
\multicolumn{n}{cols}{text}	
	A cell that spans n columns, with cols column specification.

Math mode

For inline math, use \(...\) or $...$. For displayed math, use \[...\] or \begin{equation}.

Superscript^x	^{x}	Subscript$_x$	_{x}
$\frac{x}{y}$	\frac{x}{y}	$\sum_{k=1}^{n}$	\sum_{k=1}^n
$\sqrt[n]{x}$	\sqrt[n]{x}	$\prod_{k=1}^{n}$	\prod_{k=1}^n

Math-mode symbols

$\leq$	\leq	$\geq$	\geq	$\neq$	\neq	$\approx$	\approx
$\times$	\times	$\div$	\div	$\pm$	\pm	$\cdot$	\cdot
$\circ$	^{\circ}	$\circ$	\circ	$\prime$	\prime	$\cdots$	\cdots
∞	\infty	$\neg$	\neg	$\wedge$	\wedge	$\vee$	\vee
$\supset$	\supset	$\forall$	\forall	$\in$	\in	$\rightarrow$	\rightarrow
$\subset$	\subset	$\exists$	\exists	$\notin$	\notin	$\Rightarrow$	\Rightarrow
$\cup$	\cup	$\cap$	\cap	$\mid$	\mid	$\Leftrightarrow$	\Leftrightarrow
$\dot a$	\dot a	$\hat a$	\hat a	$\bar a$	\bar a	$\tilde a$	\tilde a
α	\alpha	β	\beta	γ	\gamma	δ	\delta
ϵ	\epsilon	ζ	\zeta	η	\eta	ε	\varepsilon
θ	\theta	ι	\iota	κ	\kappa	ϑ	\vartheta
λ	\lambda	μ	\mu	ν	\nu	ξ	\xi
π	\pi	ρ	\rho	σ	\sigma	τ	\tau
υ	\upsilon	ϕ	\phi	χ	\chi	ψ	\psi
ω	\omega	Γ	\Gamma	Δ	\Delta	Θ	\Theta
Λ	\Lambda	Ξ	\Xi	Π	\Pi	Σ	\Sigma
Υ	\Upsilon	Φ	\Phi	Ψ	\Psi	Ω	\Omega

Bibliography and citations

When using BIBTEX, you need to run latex, bibtex, and latex twice more to resolve dependencies.

Citation types

\cite{key}	Full author list and year. (Watson and Crick 1953)
\citeA{key}	Full author list. (Watson and Crick)
\citeN{key}	Full author list and year. Watson and Crick (1953)
\shortcite{key}	Abbreviated author list and year. ?
\shortciteA{key}	Abbreviated author list. ?
\shortciteN{key}	Abbreviated author list and year. ?
\citeyear{key}	Cite year only. (1953)

All the above have an NP variant without parentheses; Ex. \citeNP.

BIBTEX entry types

@article	Journal or magazine article.
@book	Book with publisher.
@booklet	Book without publisher.
@conference	Article in conference proceedings.
@inbook	A part of a book and/or range of pages.
@incollection	A part of book with its own title.
@misc	If nothing else fits.
@phdthesis	PhD. thesis.
@proceedings	Proceedings of a conference.
@techreport	Tech report, usually numbered in series.
@unpublished	Unpublished.

BIBTEX fields

address	Address of publisher. Not necessary for major publishers.
author	Names of authors, of format ....
booktitle	Title of book when part of it is cited.
chapter	Chapter or section number.
edition	Edition of a book.
editor	Names of editors.
institution	Sponsoring institution of tech. report.
journal	Journal name.
key	Used for cross ref. when no author.
month	Month published. Use 3-letter abbreviation.
note	Any additional information.
number	Number of journal or magazine.
organization	Organization that sponsors a conference.
pages	Page range (2,6,9--12).
publisher	Publisher's name.
school	Name of school (for thesis).
series	Name of series of books.
title	Title of work.
type	Type of tech. report, ex. "Research Note".
volume	Volume of a journal or book.
year	Year of publication.

Not all fields need to be filled. See example below.

Common BIBTEX style files

abbrv	Standard	abstract	alpha with abstract
alpha	Standard	apa	APA
plain	Standard	unsrt	Unsorted

The LATEX document should have the following two lines just before \end{document}, where bibfile.bib is the name of the BIBTEX file.

```
\bibliographystyle{plain}
\bibliography{bibfile}
```

BIBTEX example

The BIBTEX database goes in a file called *file*.bib, which is processed with bibtex file.

```
@String{N = {Na\-ture}}
@Article{WC:1953,
  author  = {James Watson and Francis Crick},
  title   = {A structure for Deoxyribose Nucleic Acid},
  journal = N,
  volume  = {171},
  pages   = {737},
  year    = 1953
}
```

Sample LATEX document

```
\documentclass[11pt]{article}
\usepackage{fullpage}
\title{Template}
\author{Name}
\begin{document}
\maketitle

\section{section}
\subsection*{subsection without number}
text \textbf{bold text} text. Some math: $2+2=5$
\subsection{subsection}
text \emph{emphasized text} text. \cite{WC:1953}
discovered the structure of DNA.

A table:
\begin{table}[!th]
\begin{tabular}{|l|c|r|}
\hline
first  & row  & data \\
second & row  & data \\
\hline
\end{tabular}
\caption{This is the caption}
\label{ex:table}
\end{table}

The table is numbered \ref{ex:table}.
\end{document}
```