

L^AT_EX Cheatsheet

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Chapter 1

Das gute Zeug

1.1 Document classes & differences

```
\documentclass[...]{report, article, book, beamer}
```

e.g. `\documentclass[11pt,a4paper]{report}`

1.1.1 Differences with regard to available commands and environments

- `book` and `report` feature the `\chapter` sectioning command, while `article` doesn't.
- In `book` and `report`, `\appendix` will cause `\chapter`s to be typeset as "Appendix X" instead of "Chapter X". For `article`, this isn't applicable.
- `book` and `report` will start a new page for `\part`s, while `article` won't.
- `book` offers the `\frontmatter`, `\mainmatter`, and `\backmatter` commands to control page numbering (Roman for the front matter, arabic elsewhere) and numbering of sectioning titles (no numbering in the front and back matter), while `report` and `article` don't.
- `book` *doesn't* offer the `abstract` environment, while `report` and `article` *do*.

1.1.2 Differences with regard to default settings

- The `book` class uses the `twoside` class option (which means different margins and headers/footers for even and odd pages), while `report` and `article` use `oneside`.
- The `book` class uses the `twoside` class option (which means different margins and headers/footers for even and odd pages), while `report` and `article` use `oneside`.
- `book` uses `openright` (new parts and chapters start on "right" pages, adding a blank page before if necessary), while `report` uses `openany`. (Note that "right" means an odd page in twoside mode, but any page in oneside mode.) For `article`, the distinction between `openright` and `openany` isn't applicable.
- `book` uses the `headings` pagestyle for non-chapter-starting pages, while `report` and `article` always use `plain`.
- `book` and `report` use `titlepage` (the title page and – if applicable – the `abstract` environment will be typeset on pages of their own), while `article` uses `notitlepage`.

- For `book` and `report`, the lowest-level sectioning command which is numbered and incorporated into the table of contents is `\subsection`, while for article it is `\subsubsection`.
- `book` and `report` will use the arguments of `\chapter`s and `\section`s for running headings (if such headings are present), while `article` will use `\section`s and `\subsection`s.
- `book` and `report` will number floats (figures, tables etc.), equations, and footnotes per chapter, while `article` will number them continuously. Note that footnotes – even when numbered per chapter – do not feature a chapter prefix.
- `book` and `report` will use `\bibname` (which defaults to "Bibliography") for the heading of bibliographic references, while article will use `\refname` (which defaults to "References").

1.2 Packages

1. Math:

```
\usepackage {amsmath}
\usepackage {mathtools}
\usepackage {amssymb}
\usepackage {amsfonts}
\usepackage {mathrsfs} - for \mathscr    ∉ ℒ
```

2. Fancy page style:

```
\usepackage {fancyhdr}
```

3. Color:

```
\usepackage {color}
or even better \usepackage[dvipsnames]{xcolor}
```

4. Images:

```
\usepackage {graphicx}
\usepackage {epstopdf}
```

5. Unicode - fancy quotes:

```
\usepackage[T1]{fontenc}
\usepackage[utf8]{inputenc}    ∉ ℒ
```

6. Index requires Ctrl-Shift-I in WinEdt:

```
\usepackage {makeidx}
```

7. Hyper references:

```
\usepackage {hyperref}
```

8. Cols: ∉ ℒ

```
\usepackage {multicol}
```

9. Setting title formatting (font size, centering, etc.):

```
\usepackage {sectsty}
```

1.3 Package usage

1.3.1 Fancy Quotes - `\usepackage [T1]{fontenc}`

`„`, might work instead of `\quotedblbase` . `% „Hello”` .

<code>\quotedblbase</code>	„	Double low-9 quotation mark
<code>\quotesinglbase</code>	,	Single low-9 quotation mark
<code>\guillemetleft</code>	«	Left-pointing double angle quotation mark
<code>\guillemetright</code>	»	Right-pointing double angle quotation mark
<code>\guilsinglleft</code>	<	Single left-pointing angle quotation mark
<code>\guilsinglright</code>	>	Single right-pointing angle quotation mark

e.g. `\quotedblbase Cześć` - „Cześć”

e.g. `\textquotedblleft Hello\textquotedblright` - “Hello” or ```Hi’` - “Hi”

1.3.2 Centering and setting font sizes - `\usepackage {sectsty}`

Quick Usage:

```
\chaptertitlefont{\centering\LARGE}
\sectionfont{\Large}
```

Tl;dr - executes ... before printing whatever it says

Long list: $\notin \mathcal{C}$

<code>\allsectionsfont{...}</code>	<code>\subparagraphfont{...}</code>
<code>\partfont{... }</code>	<code>\minisecfont{...}</code>
<code>\chapterfont{...}</code>	<code>\partnumberfont{...}</code>
<code>\sectionfont{...}</code>	<code>\parttitlefont{...}</code>
<code>\subsectionfont{...}</code>	<code>\chapternumberfont{...}</code>
<code>\subsubsectionfont{...}</code>	<code>\chaptertitlefont{...}</code>
<code>\paragraphfont{...}</code>	

1.3.3 Dots

```
\usepackage {tocloft}
\renewcommand{\cftchapleader}{\cftdotfill{\cftdotsep}}
```

If we are in `article` , we use:

```
\renewcommand{\cftsecleader}{\cftdotfill{\cftdotsep}}
```

Disclaimer: if this command is misspelled the error doesn't appear immediately, but when a chapter is added to the Table of Contents.

1.3.4 Colors

```
% requires \usepackage{hyperref}
\hypersetup{colorlinks=true, linkcolor=cyan, citecolor=green,
  filecolor=black, urlcolor=blue}
```

Define colors:

```
\definecolor{name}{HTML}{RRGGBB} , we can could also use rgb or gray instead of HTML .
```

The option [dvipsnames] from `xcolor` defines PascalCase color names like in css like 'MidnightBlue'.

Using colors: `\colorbox {blue}{fundal}` - fundal

```
\fcolorbox {Black}{White}{text} - \text - \fcolorbox{margine}{fundal}{text}
\pagecolor{White}
```

1.4 Romanian Names and diacritics

1.4.1 Quick way $\notin \mathcal{C}$

```
\usepackage[romanian]{babel}
```

1.4.2 Long way

```
\renewcommand{\contentsname}{Cuprins}
\renewcommand{\chaptername}{Capitolul}
\renewcommand{\bibname}{B\lowercase{ibliografie}}
\renewcommand{\appendixname}{Anexa}
\renewcommand{\indexname}{I\lowercase{ndice}}
\renewcommand{\abstractname}{Rezumatul lucr\u{a}rii}
```

Disclaimer: don't combine The Long way with The Quick way

1.4.3 Proper diacritics $\notin \mathcal{C}$

```
\usepackage {combelow}
\cb {s} \cb {t}, not \c {s} \c {t} - ș ț, not s t
```

Easier diacritics:

```
\code{\usepackage[romanian]{babel}}
\usesshorthand{' }
\defineshorthand{'t'}{\cb{t}}
```

1.5 New Commands $\notin \mathcal{C}$

```
\newcommand{\mat}[1]{\mathcal{M}_{\#1}(\mathbb{R})}
\renewcommand{\contentsname}{Cuprins}

\usepackage{xparse}
% 0, o optional, m= mandatory
\DeclareDocumentEnvironment{problema}{0 {1} o m}{
  \begin{enumerate}[leftmargin=*]
    \addtocounter{enumi}{\#1}
    \item
  }{
    \end{enumerate}
    \IfValueT{\#2}{\cppcode{\#2}}
  }
\newenvironment{\name}{begin}{end}
```

1.6 Fancy Headers

1.6.1 Main Commands

```
% inside the document
\pagestyle{fancy}
\thispagestyle{fancy} % only for one page
\lhead{\nouppercase{\leftmark}}
\chead{\chaptername}
\rhead{\rightmark}
\lfoot{\thechapter}
\cfoot{\thepage}
\rfoot{\thesection}

\fancyhf{} % reset the fancy settings
```

1.6.2 Page Styles

empty	Empty headers and footers
plain	The default, just the page number
myheadings	The page number in header - right on even pages and left on odd pages

1.6.3 Information commands

<code>\thepage</code>	the current page number
<code>\thechapter</code>	the number of the current chapter
<code>\thesection</code>	the number of the current section
<code>\chaptername</code>	the word chapter or equivalent in the current language
<code>\leftmark</code>	the name& number of the current level I structure (Chapter for reports and books classes; Section for articles) in uppercase letters.
<code>\rightmark</code>	the name and number of the current next to top-level structure (Section for reports and books; Subsection for articles) in uppercase letters.

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1.7 Text alignment

```
\begin{center} Centered \end{center}
\begin{flushleft} Left \end{flushleft}
\begin{flushright} Right \end{flushright}
```


Chapter 2

The rest

2.1 Page Size and layout

2.1.1 Quick way $\notin \mathcal{C}$

```
\usepackage {geometry}  
\geometry{a4paper,left=30mm,right=20mm,top=20mm,bottom=30mm}
```

2.1.2 Other way

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2.2 Symbols

2.2.1 The bane of students

<code>\backslash\$</code>	<code>\textbackslash</code>	<code>\</code>	backslash
<code>\LaTeX</code>		L ^A T _E X	<i>that</i> symbol

2.2.2 Diacritics

<code>\^{a}</code>	â	circumflex
<code>\i \j</code>	ıȷ	dotless i and j
<code>\`{o}</code>	ò	grave accent
<code>\'{o}</code>	ó	acute accent
<code>\^{o}</code>	ô	circumflex
<code>\"{o}</code>	ö	umlaut, trema or dieresis
<code>\H{o}</code>	ő	long Hungarian umlaut (double acute)
<code>\~{o}</code>	õ	tilde
<code>\c{c}</code>	ç	cedilla
<code>\k{a}</code>	ą	ogonek
<code>\l{}</code>	ł	barred l (l with stroke)
<code>\={o}</code>	ō	macron accent (a bar over the letter)
<code>\b{o}</code>	ȯ	bar under the letter
<code>\.{o}</code>	ó	dot over the letter
<code>\d{u}</code>	ȳ	dot under the letter
<code>\r{a}</code>	å	ring over the letter
<code>\u{o}</code>	ö	breve over the letter

2.4.2 Units

- pt - a point is 1/72.27 inch, that means about 0.351 mm in non freedom units
- mm - millimeter
- cm - centimeter
- in - inch
- ex - roughly the height of an "x" in the current font
- em - roughly the width of an "M" (uppercase) in the current font

2.4.3 Page Numbers

<code>\thispagestyle {empty}</code>	no page number
<code>\pagenumbering {roman}</code>	roman i ii
<code>\pagenumbering {Roman}</code>	Roman I II
<code>\pagenumbering {arabic}</code>	arabic
<code>\pagenumbering {alph}</code>	alph - a b
<code>\pagenumbering {Alph}</code>	alph - A B

`\pagenumbering` resets the counter, use `\setcounter{page}{7}` afterwards to set the counter

2.4.4 Self explanatory

```
\include{smth.txt}
\tableofcontents

\newpage
\clearpage
```

2.5 Document Structure

2.5.1 Main structure

```
\part{Part}
\chapter{C} % not found in article
\section{S}
\subsection{SS}
\subsubsection{SSS}
\paragraph{P}
\subparagraph{SP}
```

Adding `[Short title]` will add that short name in the Table contents.

Adding a `*` will not add the structure to Table of contents and will not number it.

To add it to the Table of contents use: `\addcontentsline{toc}{section}{My name}`

Not adding this before a link or reference might not center the page properly

```
\phantomsection
```

e.g. `\phantomsection\label{Label}`

2.5.2 Title page¹

```
\title{\LaTeX CheatSheet}
\author{Łucasz Zieliński\thanks{Dzięki światu}}
\date{\today}

\begin{titlepage}
  \maketitle
\end{titlepage}
```

2.5.3 Bibliography, abstract, index and appendix

```
\appendix
\chapter{something}

\begin{abstract}
Bla bla
\end{abstract}
```

2.5.4 Bibliography

```
\begin{thebibliography}{99}
  \bibitem{author/19} The Author, A book, 2018
\end{thebibliography}
```

Cite from bibliography[1].

Index

```
%in preamble
\makeindex
%in doc
\phantomsection
\addcontentsline{toc}{chapter}{Index} %index is not added by default to tableofcontents
\printindex
```

Add word to index: `\index{Entry}`

2.6 Font styles

2.6.1 Text mode

<code>\textnormal {Normal}</code>	Normal	The default font
<code>\textrm {Roman}</code>	Roman	Roman font
<code>\textsf {Sans}</code>	Sans	Sans serif
<code>\texttt {Typewriter}</code>	Typewriter	Teletype - monospace font

¹see the actual title page

<code>\emph {Emph \emph {nested}}</code>	<i>Emph nested</i>	Emphasis. Might be nested
<code>\textbf {Bold}</code>	Bold	Boldface
<code>\textmd {Medium}</code>	Medium	Medium - default
<code>\textup {Upright}</code>	Upright	Upright shape - default
<code>\textit {abcx - Italics}</code>	<i>abcx - Italics</i>	Italic shape
<code>\textsl {abcx - Slanted}</code>	<i>abcx - Slanted</i>	Slanted shape
<code>\textsc {Small Caps}</code>	SMALL CAPS	Small Capitals
<code>\uppercase {Uppercase \$F=x\$}</code>	UPPERCASE $F = X$	Uppercase
<code>\lowercase {Lowercase \$F=x\$}</code>	lowercase $f = x$	Lowercase
<code>\tiny {tiny}</code>	tiny	tiny
<code>\scriptsize {script}</code>	script	scriptsize
<code>\footnotesize {footnote}</code>	footnote	footnote
<code>\small {small}</code>	small	small
<code>\normalsize {normalsize}</code>	normalsize	normal - default
<code>\large {large}</code>	large	large
<code>\Large {Large}</code>	Large	Large
<code>\LARGE {LARGE}</code>	LARGE	LARGE
<code>\huge {huge}</code>	huge	huge
<code>\Huge {Huge}</code>	Huge	Huge

2.6.2 Math mode

<code>\text {ABC\ i\ abc\ 123}</code>	ABC i abc 123	Enter text mode
<code>\mathnormal {ABC\ i\ abc\ 123}</code>	<i>ABC i abc 123</i>	Default
<code>\mathrm {ABC\ i\ abc\ 123}</code>	ABC i abc 123	Roman - one word functions
<code>\mathit {ABC\ i\ abc\ 123}</code>	<i>ABC i abc 123</i>	Italics - words spaced more naturally
<code>\mathbf {ABC\ i\ abc\ 123}</code>	ABC i abc 123	Boldface
<code>\mathsf {ABC\ i\ abc\ 123}</code>	ABC i abc 123	Sans serif
<code>\mathtt {ABC\ i\ abc\ 123}</code>	ABC i abc 123	Teletype - monospaced
<code>\mathfrak {ABC\ i\ abc\ 123}</code>	𝔸𝔖𝔢 i abc 123	Fraktur
<code>\mathcal {ABC\ I\ DEF}</code>	<i>ABC I DEF</i>	Caligraphy - of note \mathcal{M} atrix (uppercase only)
<code>\mathbb {ABC\ I\ DEF}</code>	ABC I DEF	Blackboard bold - of note \mathbb{R} (uppercase only)
<code>\mathscr {ABC\ I\ DEF}</code>	<i>ABC I DEF</i>	Script - Super \mathscr{F} ancy (uppercase only)

Indice

Entry, [10](#)

Bibliography

- [1] Dilip Datta, *L^AT_EX in 24 Hours. A Practical Guide for Scientific Writing*, Springer, Cham, 2017