

A short introduction to \LaTeX

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Advantages

- Suitable for producing scientific and mathematical documents
- One template → same layout
- Structured and organised documents
- Convenient use of mathematical formula, graphics, tables
- Table of contents, figures and bibliographies
- Freeware

Disadvantages

- Hard to create new layouts
- Tons of hard to learn commands
- Layouting in text-mode
- Viewing the results needs compilation
- Timeconsuming debugging for beginners

Installation

- L^AT_EX for Linux (packages for Linux distributions)
- MacTeX for MacOS
- MikTeX for Windows

Download-link of MikTeX:

<http://www.miktex.org/setup.html>

More information about MikTeX

<http://www.dante.de/help/documentation/miktex/>

Suitable editors for creating T_EX files:

- TeXnicCenter (freeware)

<http://www.texniccenter.org/>

- LaTeXEditor (freeware)

<http://www.latexeditor.org/>

- LyX

<http://www.lyx.org/>

- WinEdt

<http://www.winedt.com/>

A L^AT_EX Document

```
\documentclass{...}  
\usepackage{...}  
...
```

preamble

```
\begin{document}
```

```
\title{...}  
\author{...}  
\date{...}  
\maketitle
```

top matter

```
\begin{abstract}  
...  
\end{abstract}
```

abstract

```
\section{...}
```

```
\section{...}
```

```
\begin{thebibliography}{9}  
...  
\end{thebibliography}
```

bibliography

body

```
\end{document}
```

Figure: A Schema of a /LateX document [Grä95]

First Steps

Now it is up to you to summarize your results concerning **paired comparison methods**. Don't forget to use for starting a new line and For writing mathematic formula:

- writing in a math environment

$$\sum_{i=1}^n i = \frac{n(n+1)}{2} \quad (1)$$

- within the text you can use

$$\sum_{i=1}^n i = \frac{n(n+1)}{2}$$

```
\documentclass[a4paper,german]{article}
\usepackage[german]{babel}
\begin{document}
```

Now it is up to you to summarize your results concerning `\textbf{paired comparison methods}`. Use `\\` for starting a new line and `%` for comments For writing mathematic formula:

```
\begin{itemize}
\item writing in a math environment
\begin{equation}
\sum_{i=1}^n i = \frac{n(n+1)}{2}
\end{equation}
\item within the text you can use
 $\sum_{i=1}^n i = \frac{n(n+1)}{2}$ 
\end{itemize}
\end{document}
```


Compile the File

- create new folder
- save the file as .tex there
- compile the tex file to get a dvi or pdf

For this course please use our template

It is possible to put all files together in one file with "insert". So there is no huge file and each chapter can be written in an own file.

Useful Links

Installation instructions

- Installationguide for MikTeX and TeXnicCenter

<http://www.uni-bielefeld.de/lili/organisationen/intbuero/service/kurse/latex/Installationsanleitung.pdf>

- Another good Installationguide

<http://www.dante.de/help/documentation/miktex/>

General Webpages

- CTAN Webpage <http://www.ctan.org/>

- L^AT_EX Project <http://www.latex-project.org/>

Useful Links

\LaTeX Tutorials

- Short introduction including an installation guide

<http://www.grundstudium.info/latex/>

- Online tutorial

<http://www.tug.org.in/tutorials.html>

- LaTeX@TUG

<http://latex.tugraz.at>

an advisable webpage; very assistant with an tutorial,
useful links and tips even for advanced users

Useful Links

\LaTeX Documentations

- $\text{\LaTeX}2_{\epsilon}$ -Kurzbeschreibung

`http:`

`//www.ctan.org/tex-archive/info/german/LaTeX2e-Kurzbeschreibung/l2kurz.pdf`

- The Not So Short Introduction to $\text{\LaTeX}2_{\epsilon}$

`http://www.ctan.org/tex-archive/info/lshort/english/lshort.pdf`

- A comprehensive \LaTeX Documentation of the University of Cambridge

`http://www-h.eng.cam.ac.uk/help/tpl/textprocessing/LaTeX_intro.html`

■ Online tutorial on BibTeX

<http://www.tug.org.in/tutorial/chap10-scr.pdf>

■ Tutorial on BibTeX

<http://www.dante.de/dante/events/dante2002/handouts/raichle-bibtexp prog.pdf>

■ Short tutorial on BibTeX

<http://www.dante.de/dante/events/dante2001/handouts/hoepfner-bibtex/vortrag.pdf>

For Further Reading



GRÄTZER, GEORGE A.: *Math into \LaTeX : an introduction to \LaTeX and AMS- \LaTeX .*

[http:](http://www.ctan.org/tex-archive/info/mil/mil.pdf)

[//www.ctan.org/tex-archive/info/mil/mil.pdf](http://www.ctan.org/tex-archive/info/mil/mil.pdf),
1995.

L^AT_EX 2_ε 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/s4paper 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[options]{class}`.

Packages

fullpage Use 1 inch margins.
anysize Set margins with `\marginwidth{I}{r}{t}{b}`.
multicol Use *n* columns with `\begin{multicols}{n}`.
l^AT_EX Use L^AT_EX symbol font.
 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.

Document structure

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

Section commands can be followed with an ***, like `\section*{title}`, to suppress heading numbers.
`\setcounter{secnumdepth}{x}` suppresses heading numbers of depth *x*, where `chapter` has depth 0.

Text environments

`\begin{comment}` Comment block (not printed).
`\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, *b*=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
<code>\textrm{text}</code>	<code>\rm text</code>	Roman family
<code>\textsf{text}</code>	<code>\sf text</code>	Sans serif family
<code>\texttt{text}</code>	<code>\tt text</code>	Typewriter family
<code>\textmd{text}</code>	<code>\md text</code>	Medium series
<code>\textbf{text}</code>	<code>\bf text</code>	Bold series
<code>\textup{text}</code>	<code>\up text</code>	Upright shape
<code>\textit{text}</code>	<code>\it text</code>	<i>Italic shape</i>
<code>\textsl{text}</code>	<code>\sl text</code>	<i>Slanted shape</i>
<code>\textsc{text}</code>	<code>\sc text</code>	SMALL CAPS SHAPE
<code>\emph{text}</code>	<code>\em text</code>	<i>Emphasized</i>
<code>\textnormal{text}</code>	<code>\normalfont text</code>	Document font
<code>\underline{text}</code>	<code>\underline</code>	<u>Underline</u>

The command `\texttt{}` form handles spacing better than the declaration `\texttt{}` form.

Font size

Command	Effect
<code>\tiny</code>	<small>tiny</small>
<code>\scriptsize</code>	<small>scriptsize</small>
<code>\footnotesize</code>	<small>footnotesize</small>
<code>\small</code>	<small>small</small>
<code>\normalsize</code>	<small>normalsize</small>
<code>\large</code>	<small>large</small>

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
<code>\begin{center}</code>	<code>\centering</code>
<code>\begin{flushleft}</code>	<code>\raggedright</code>
<code>\begin{flushright}</code>	<code>\raggedleft</code>

Miscellaneous

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

Text-mode symbols

Symbols

<code>&</code>	<code>\&</code>	<code>-</code>	<code>_</code>	<code>...</code>	<code>\ldots</code>	<code>•</code>	<code>\textbullet</code>
<code>\$</code>	<code>\\$</code>	<code>^</code>	<code>\^</code>	<code> </code>	<code>\textbar</code>	<code> </code>	<code>\textbackslashash</code>
<code>%</code>	<code>\%</code>	<code>^</code>	<code>\^</code>	<code>#</code>	<code>\#</code>	<code> </code>	<code>\textbar</code>

Accents

<code>ò</code>	<code>\`o</code>	<code>ô</code>	<code>\^o</code>	<code>õ</code>	<code>\~o</code>	<code>ö</code>	<code>\o</code>
<code>ó</code>	<code>\'o</code>	<code>õ</code>	<code>\~o</code>	<code>ø</code>	<code>\o</code>	<code>œ</code>	<code>\oe</code>
<code>ç</code>	<code>\c</code>	<code>ç</code>	<code>\c</code>	<code>œ</code>	<code>\oe</code>	<code>œ</code>	<code>\oe</code>
<code>È</code>	<code>\`E</code>	<code>æ</code>	<code>\ae</code>	<code>ä</code>	<code>\aa</code>	<code>Ä</code>	<code>\AA</code>
<code>ø</code>	<code>\o</code>	<code>ø</code>	<code>\o</code>	<code>l</code>	<code>\l</code>	<code>l</code>	<code>\l</code>
<code>j</code>	<code>\j</code>	<code>i</code>	<code>\i</code>	<code>¿</code>	<code>\?</code>		

Delimiters

<code>'</code>	<code>\'</code>	<code>[</code>	<code>\[</code>	<code>(</code>	<code>\(</code>	<code><</code>	<code>\textless</code>
<code>'</code>	<code>\'</code>	<code>]</code>	<code>\]</code>	<code>)</code>	<code>\)</code>	<code>></code>	<code>\textgreater</code>

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` March 3, 2005.
`\sin$` Prints `~` instead of `\^`, which makes `~`.
`$` 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*.

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\$Revision: 1.4 \$, \$Date: 2002/03/18 20:40:59 \$.
<http://www.stdot.org/~winston/latex/>