

# The very short guide to typesetting with L<sup>A</sup>T<sub>E</sub>X

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## What's this all about? What's L<sup>A</sup>T<sub>E</sub>X?

L<sup>A</sup>T<sub>E</sub>X is a document preparation system for the T<sub>E</sub>X typesetting program. It enables you to produce publication-quality output with great accuracy and consistency. L<sup>A</sup>T<sub>E</sub>X works on any computer and produces industry-standard PDF or PS documents. It is available both in free (open-source) and commercial implementations. L<sup>A</sup>T<sub>E</sub>X can be used for any kind of document, but it is especially suited to those with a complex structure, repetitive formatting, or notations like mathematics<sup>1</sup>; or where technical stability, dimensional accuracy, or a persistent and non-proprietary file format are needed. Install the free software from [www.tug.org/texlive/](http://www.tug.org/texlive/) or buy a commercially-supported version from one of the vendors (see back page).

## Creating and typesetting your document

1. Create your document using any suitable plain-text editor with L<sup>A</sup>T<sub>E</sub>X controls, eg *T<sub>E</sub>Xshop* (Mac), *T<sub>E</sub>XnicCenter* (Win), *Kile* (Linux), *Emacs* (all), even *vi*!
2. Save the file with a name ending in `.tex` (*never* use spaces in filenames!);
3. Use the toolbar buttons or menu items in your editor to typeset and display the document (you need *Acrobat Reader* or similar to display the PDF output);
4. Make any changes needed in your original document and repeat step 3.

## Syntax (how to type L<sup>A</sup>T<sub>E</sub>X commands — these are the rules)

☞ All L<sup>A</sup>T<sub>E</sub>X commands begin with a backslash.

**Example:** `\tableofcontents`

☞ If a command needs text to work with (an 'argument'), it goes in curly braces.

**Example:** `\title{Irisches Tagebuch}\author{Heinrich Böll}`

☞ If options are used, they go in square brackets first, before the curly braces.

**Example:** `\documentclass[a4paper,11pt]{book}`

☞ Spaces after commands *without* braces get suppressed.

**Example:** `Copyright \copyright_2013` ➡ Copyright ©2013 ☒

To prevent this, put empty curly braces after the command.

**Example:** `Copyright \copyright{}_2013` ➡ Copyright © 2013 ☑

☞ Curly braces are also used to restrict the scope of effects inside them.

**Example:** `Some {\tiny little} word` ➡ Some little word

**Note.** This guide shows only a tiny fraction of L<sup>A</sup>T<sub>E</sub>X's power. For more information, visit the T<sub>E</sub>X Users Group site ([www.tug.org](http://www.tug.org)). For help, see the FAQ ([www.tex.ac.uk/faq](http://www.tex.ac.uk/faq)) and the Usenet newsgroup `comp.text.tex`. For packages, use the Comprehensive T<sub>E</sub>X Archive Network ([www.ctan.org](http://www.ctan.org)). For documentation, use the sources in the *References* [2].

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<sup>1</sup>For reasons of space this guide does not cover details of mathematics typesetting.

## Basic document structure

Here's the skeleton of a L<sup>A</sup>T<sub>E</sub>X document. These three lines are *compulsory*: your document will not work without them:

```
\documentclass{article}
  your Preamble goes here (extra setups, if any)
\begin{document}
  your document text goes here
\end{document}
```

- ☞ The document class name must be one of the standard `book`, `article`, or `report`, or one of the many extras preinstalled or downloadable (eg `thesis`, `memoir`, etc).
- ☞ There are paper size options `a4paper` (210 mm × 297 mm) and `letterpaper` (8½" × 11") and others (eg `a5paper`).
- ☞ There are body type size options `10pt` (the default), `11pt`, and `12pt`.

New material introduced in each example is shown below in **blue**; previous material in black.

## Front matter

The **Preamble** is where you specify any extra **packages** (L<sup>A</sup>T<sub>E</sub>X plugins) such as typefaces or special formatting requirements, and where you put any changes to standard features.

```
\documentclass[a4paper,11pt]{book}
\usepackage{charter,graphicx}
\setlength{\parindent}{1em}
\begin{document}
\title{your document title}
\author{your name}
\date{date of publication}
\maketitle
\begin{abstract}
  the paragraphs of your abstract go here
\end{abstract}
\tableofcontents
  the text of your document goes here
\end{document}
```

In a typical document, the title, author, date, abstract (summary), and table of contents (optional) all go at the start, followed by your text.

Leave a blank line between paragraphs as you type. To L<sup>A</sup>T<sub>E</sub>X, this means 'start a new paragraph', *not* 'leave a blank line'. You can control spacing and indentation by setting `\parskip` and `\parindent` with the `\setlength` command as in the previous example, or with the `parskip` package.

## Sections and cross-references

Sections get numbered automatically in bold type, and get included in the Table of Contents (if any). Numbering can be turned off selectively. Section heading layout can be modified with the `sectsty`, `titlesec`, and other packages. Use the `babel` package for other languages.

```
(Preamble, tiling, and abstract as above)
\setcounter{secnumdepth}{3}
\tableofcontents
\chapter{heading of a chapter}
  text for the chapter goes here
...as shown in section \ref{blah}.
\section{heading of a section}
\label{blah}  make up name for the label
  text for the section goes here
\chapter{heading of a new chapter}
  text for the new chapter goes here
\end{document}
```

For cross-references, use `\label{...}` to label the target and `\ref{...}` and/or `\pageref{...}` to refer to it. Make up the label values: L<sup>A</sup>T<sub>E</sub>X will use them to work out the right numbers to print.

**Example:** ...section \ref{blah} on p. \pageref{blah}. ➡ ...section 3 on p.9.

## Typefaces

L<sup>A</sup>T<sub>E</sub>X's default typeface is Computer Modern. There is a selection of other typeface packages (use them in your Preamble):

|          |                       |                      |                       |
|----------|-----------------------|----------------------|-----------------------|
| Times    | <code>mathptmx</code> | Courier              | <code>courier</code>  |
| Palatino | <code>mathpazo</code> | Avant Garde          | <code>avant</code>    |
| Bookman  | <code>bookman</code>  | Helvetica            | <code>helvet</code>   |
| Charter  | <code>charter</code>  | <i>Zapf Chancery</i> | <code>chancery</code> |
| Utopia   | <code>utopia</code>   | Pandora              | <code>pandora</code>  |
| Century  | <code>newcent</code>  | Œrgraffur            | <code>oldgerm</code>  |

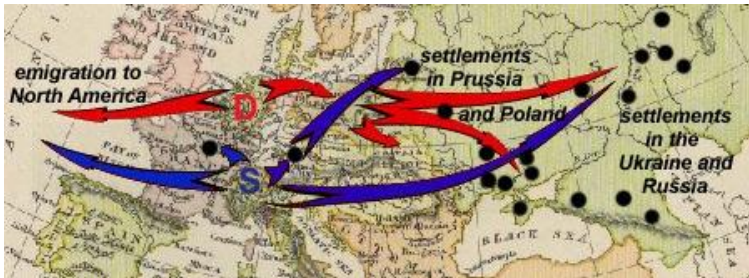
See each package's documentation for details.



## Tables and Figures, *continued*

```
\begin{figure}
\caption{Swiss and Dutch Mennonite migrations of the 1700s and 1800s}\label{lmig}
\centering (graphics must be EPS files for standard LATEX; but JPG, PNG, or PDF for pdfLATEX)
\includegraphics[width=.8\columnwidth]{menno-a} \ \ (double backslash for forced linebreak)
\scriptsize Courtesy of Paul C. Adams, Department of Geography and the
Environment, University of Texas at Austin. \cite{adams}\end{figure}
```

**Figure 1:** *Swiss and Dutch Mennonite migrations of the 1700s and 1800s*



Courtesy of Paul C. Adams, Department of Geography and the Environment, University of Texas at Austin. [1]

## Footnotes, citations, references, and indexes (back matter)

You do footnotes with a simple command,<sup>2</sup> see below. Citations using BIB<sub>T</sub>E<sub>X</sub> (Patashnik, 1988) are easy (see [2], §7.4.2), and there are packages for more complex formats for journals and publishers. You can add indexes with the `\index` and `\printindex` commands and the `makeindex` program.

```
You do footnotes with a simple command,\footnote{Like this.} see below. Citations
using BIBTEX \citeauthor{oren} are easy (see \cite[§7.4.2]{flynn}), and
there are packages for more complex formats for journals and publishers. You can
add indexes with the \verb'\index' and \verb'\printindex' commands and the
\textsf{makeindex} program.
\bibliography{myrefs} \bibliographystyle{apalike} (see BIBTEX manual [3] for details)
```

## References

1. Adams, Paul C. *Linguistic Chaos in Montreal*, [www.utexas.edu/depts/grg/adams/chaos.ppt](http://www.utexas.edu/depts/grg/adams/chaos.ppt), 2/59, Oct 2006.
2. Flynn, P. *Formatting Information*, 2005, at [latex.silmaril.ie/formattinginformation/](http://latex.silmaril.ie/formattinginformation/)
3. Patashnik, O. *BIB<sub>T</sub>E<sub>X</sub>ing*, T<sub>E</sub>X Users Group, 1988 (distributed with all copies of L<sup>A</sup>T<sub>E</sub>X).
4. Sherington, J. example table in 'Informative Presentation of Tables, Graphs and Statistics', 4.2, Statistical Services Centre, University of Reading, [www.reading.ac.uk/ssc/publications/guides/toptgs.html](http://www.reading.ac.uk/ssc/publications/guides/toptgs.html)
5. T<sub>E</sub>X Users Group, for T<sub>E</sub>X Live ([www.tug.org/texlive/](http://www.tug.org/texlive/)) and CTAN (Comprehensive T<sub>E</sub>X Archive Network) for downloads ([www.ctan.org](http://www.ctan.org)).

**Note.** Commercial implementations of T<sub>E</sub>X with business support are available from Personal T<sub>E</sub>X, Inc (PCT<sub>E</sub>X); Blue Sky Research (Textures [Mac]); MacKichan Software, Inc (Scientific Word); Micropress, Inc (V<sub>T</sub>E<sub>X</sub>), TrueT<sub>E</sub>X Software (TrueT<sub>E</sub>X), and others.

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<sup>2</sup>Like this.