The very short guide to typesetting with \LaTeX

What’s this all about? What’s \LaTeX?

\LaTeX{} is a document preparation system which uses the \TeX{} typesetting program. It enables you to produce publication-quality documents with great accuracy and consistency. \LaTeX{} works on any computer and produces industry-standard PDF. It is available both in free (open-source) and commercial implementations. \LaTeX{} can be used for any kind of document, but it is especially suited to those with complex structures repetitive formatting, or notations like mathematics; or where technical stability, dimensional accuracy or a persistent and non-proproprietary file format are needed. Install the software from \url{www tug texlive eu} or buy a commercially-supported version from one of the vendors (see the list on p. 3).

Creating and typesetting your document

1. Create your document using any suitable plain-text editor with \LaTeX{} controls, eg. \TeX{}Shop (Mac), \TeX{}Maker (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 \texttt{Build} or \texttt{Compile} toolbar button or menu item in your editor to typeset and display the document;
4. Make any changes needed in your original document and repeat step 3.

Syntax (how to type \LaTeX{} commands — these are the rules)

\begin{itemize}
\item All \LaTeX{} commands begin with a backslash. Example: \texttt{\textbackslash tableofcontents}
\item If a command needs text to work with, it goes in curly braces. Example: \texttt{\textbackslash title\{Irish\es\ Tagebuch\}}\texttt{\textbackslash author\{Heinrich Böll\}}
\item If options are used, they go in square brackets before the curly braces. Example: \texttt{\textbackslash \texttt{documentclass}[a4paper,11pt]{book}}
\item Spaces after commands with no braces get suppressed. Example: \texttt{\textbackslash copyright\{\textbackslash copyright\}_20\textbackslash year\{2020\}}
\item Curly braces are also used to restrict the scope of effects inside them. Example: \texttt{\textbackslash tiny\{\textbackslash tiny\}}\texttt{\textbackslash word}\texttt{\textbackslash tiny\word}
\end{itemize}

Notes: This guide shows only a tiny fraction of \LaTeX{}'s power. For more information, visit the \TeX{} Users Group site (www tug org). For help, see the FAQ (www tex au\au/faq). Stack Exchange (tex.stackexchange\com), or the UseNet newsgroup comp.text.tex. For packages (plug-ins), use CTAN, the Comprehensive \TeX{} Archive Network (www ctan org). For further details, see Formatting Information (Flynn, 2018) and other online resources.

1For reasons of space this guide does not cover details of mathematics typesetting.
Writing a \LaTeX{} document

1 Basic document structure

Here’s the skeleton of a \LaTeX{} document. These three lines are COMPULSORY; your document will not work without them:

\begin{verbatim}
\documentclass[11pt]{article}
\begin{document}
\end{document}
\end{verbatim}

\begin{itemize}
\item The document class name MUST be one of the standard book, article, or report, or one of the many others preinstalled or downloadable (eg thesis, memo, etc).
\item There are body type size options 10pt (the default) 11pt and 12pt;
\item There are paper size options including a4paper (210 mm x 297 mm) and letterpaper (8½" x 11") [see below].
\end{itemize}

2 Front matter

The \texttt{Preamble} [see above] is where you specify any \LaTeX{} plug-ins like \texttt{listings} or special formatting, and where you put any changes to standard features

\begin{verbatim}
\documentclass[10pt,a4paper,11pt]{book}
\usepackage[german,american]{babel}
\usepackage[ngerman]{babel}
\usepackage{charter,mathpazo}
\begin{document}
\title{Your document title}
\author{Your name}
\maketitle
\begin{abstract}
the paragraphs of your abstract go here
\end{abstract}
\tableofcontents
\end{document}
\end{verbatim}

The title, author, and date MUST be followed by the \texttt{maketitle} command to be formatted correctly.

3 Body matter

Leave a blank line between paragraphs as you type: this signals a new paragraph. Spacing is controlled by the document class and packages you use. For an indented, line-spaced style, use the \texttt{paripage} package.

31 Sectioning: Sections are numbered automatically in bold type, and get included in the Table of Contents (if you use it). Numbering can be turned off selectively. Section heading layout can be modified with the \texttt{sectrue}, \texttt{titlsec} and other packages.

(Preamble, titling, and abstract as above)

\begin{verbatim}
\tableofcontents
\chapter{heading of a chapter}
\texttt{footnote}{the text for this chapter goes here}
\texttt{footnote}{as shown in section \texttt{ref}(blah)}.
\section{heading of a section}
\label{ blah}
\makeatletter
\texttt{footnote}{make up name for the label}
\texttt{footnote}{the text for this section goes here}
\chapter{heading of a new chapter}
\texttt{footnote}{text for the new chapter goes here}
\end{document}
\end{verbatim}

32 Lists

There are three types of list: \texttt{itemized} (bulleted), \texttt{enumerate} (numbered or lettered), and \texttt{description} (topic-and-explanation format).

Like document, these are all environments, using \begin{verbatim} and \end{verbatim}.

\begin{verbatim}
\begin{itemize}
\item \texttt{itemized}{
\item Ibh Sugar
\item lpt
\item Cream
\item Chocolate
\item the Butter
\end{itemize}
\end{verbatim}

33 Tables and figures: These environments float (to fit available space). They have \texttt{caption} and \texttt{label} commands.

\begin{verbatim}
\begin{figure}
\texttt{fig}{see below}
\caption{Swiss and Dutch Mennonite migrations of the 1700s and 1800s}
\label{fig}
\includegraphics[width=83mm]{myimage}
\end{figure}
\begin{table}
\texttt{tab}{mean growth rate and intake of supplement, milk, and water for 4 days (after Shertruly, J. undated)}
\caption{Disturbance growth}
\label{tab}
\end{table}
\end{verbatim}

Figures and tables:\n
\begin{verbatim}
\begin{figure}
\caption{Swiss and Dutch Mennonite migrations of the 1700s and 1800s}
\begin{tabular}{|c|c|c|c|}
\hline
\texttt{supplement} & \texttt{growth rate} & \texttt{intake} & \texttt{water} \\
\texttt{mg/kg/day} & \texttt{mg/kg/day} & \texttt{ml/kg} & \texttt{ml/kg} \\
\hline
\texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192
\end{tabular}
\end{figure}

\begin{table}
\caption{Mean growth rate and intake of supplement, milk, and water for 4 days (after Shertruly, J. undated)}
\begin{tabular}{|c|c|c|c|}
\hline
\texttt{supplement} & \texttt{growth rate} & \texttt{intake} & \texttt{water} \\
\texttt{mg/kg/day} & \texttt{mg/kg/day} & \texttt{ml/kg} & \texttt{ml/kg} \\
\hline
\texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192 \texttt{Lactone} & 140 & 450 & 10.3 & 192
\end{tabular}
\end{table}

\end{verbatim}

34 Typesfaces: The default typeface in \LaTeX{} is Computer Modern, like this:

\begin{verbatim}
\texttt{Times}{mathtext}
\texttt{Palatino}{mathpazo}
\texttt{Bookman}{bookman}
\texttt{Charter}{charter}
\texttt{Utopia}{utopia}
\texttt{Century}{century}
\texttt{courier}{courier}
\texttt{avantgarde}{avantgarde}
\texttt{Helvetica}{helv}
\texttt{zapfchancery}{zapfchancery}
\texttt{pandora}{pandora}
\texttt{oldgerm}{oldgerm}
\end{verbatim}

\texttt{Postscript} Type 1 font can be configured for \LaTeX{}. If you use \texttt{Xe\LaTeX{}} and the \texttt{fontspec} package, you can also use your computer’s system fonts as well as those available with \TeX{} Live.

\begin{verbatim}
\font{Palatino}{mathpazo}{rm}{12}
\font{Charter}{charter}{m}{12}
\end{verbatim}

\texttt{Commercial} implementations of \texttt{pdfLaTeX} for Windows with business-use support are available from Perspicus, \texttt{Xe\LaTeX{}} and \texttt{MacLeters}, \texttt{Microtype} for \texttt{Xe\LaTeX{}} and \texttt{Xe\LaTeX{}}.\texttt{pdfLaTeX} configurations include \texttt{Xe\LaTeX{}} and \texttt{pdfLaTeX}.

Dozens of other font packages are available in \texttt{Xe\LaTeX{}} Live and the \texttt{\LaTeX{} Font Catalogue} including mathematics and decorative fonts. Any