The very short guide to typesetting with \Parent T_EX

Silmaril Consultants Textual Therapy Division latex.silmaril.ie

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What's this all about? What's ETEX?

 M_{EX} is a document preparation system for the T_{EX} typesetting program. It enables you to produce publication-quality output with great accuracy and consistency. M_{EX} works on any computer and produces industry-standard PS or PDF documents. It is available both in free (open-source) and commercial implementations. M_{EX} can be used for any kind of document, but it is especially suited to those with a complex structure, repetitive formatting, or notations like mathematics¹; or where technical stability, dimensional accuracy, or a persistent and non-proprietary file format are needed.

Syntax (how to type LATEX commands — these are the rules)

- All MTEX commands begin with a backslash. Example: \tableofcontents
- If a command needs text to work with, it goes in curly braces. Example: \title{Irisches Tagebuch}\author{Heinrich Böll}
- If options are used, they go in square brackets first. Example: \documentclass[a4paper,11pt]{book}
- Space after commands without braces gets suppressed.
 Example: Copyright \copyright 2009 III Copyright ©2009 I
 To prevent this, put empty curly braces after the command.
 Example: Copyright \copyright {} 2009 III Copyright © 2009 I
- Curly braces are also used to restrict the scope of effects inside them. Example: Some {\tiny little} word IIII Some little word

Creating and typesetting your document

- 1. Create your document using any suitable plain-text editor with Larger controls, eg *T_FXshop* (Mac), *T_FXnicCenter* (Win), *Kile* (Linux), *Emacs* (all);
- 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;
- 4. Make any changes needed in your original document and repeat step 3.

Note. This guide shows only a tiny fraction of $\mathbb{M}_{\mathbb{E}}X$'s power. For information, visit the TeX Users Group site (www.tug.org). For help, see the FAQ (www.tex.ac.uk/faq) and the Usenet newsgroup comp.text.tex. For packages, use the Comprehensive TeX Archive Network (www.ctan.org). For documentation, use the sources in the *References* [2].

¹For reasons of space this guide does not cover details of mathematics typesetting.

Basic document structure

Here's the skeleton of a MT_EX 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 book, article, or report, or an extra one you have downloaded and installed (eg thesis, memoir, etc).
- There are paper size options a4paper (210 mm×297 mm) and letterpaper (8½"×11") and others (eg a5paper).
- There are base type size options 10pt (the default), 11pt, and 12pt.

Front matter

The **preamble** is where you specify any extra **packages** (MTEX 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 the abstract go here
\end{abstract}
\tableof contents
rest of the document goes here
\end{document}
```

In a typical report or article, 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. This means 'start a new paragraph', *not* 'leave a blank line'. You can control spacing and indentation by setting \parskip and \parindent (see examples), 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, titling, and abstract as above)
\tableofcontents
\section{ <i>heading of a section</i> }
text for the section goes here
as shown in section \ref{blah}.
\subsubsection{ <i>heading of a subsection</i> }
text for the subsection goes here
\section{ <i>heading of a new section</i> }
<pre>\label{blah} make up name for the label</pre>
text for the section 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: $M_E X$ will use them to work out the right numbers to print.

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

Typefaces

MEX's default typeface is Computer Modern. There is a selection of other typeface packages (use them in your Preamble):

Times	mathptmx	Courier	courier
Palatino	mathpazo	Avant Garde	avant
Bookman	bookman	Helvetica	helvet
Charter	charter	Zapf Chancery	chancery
Utopia		Pandora	pandora
New Centu	newcent		

Dozens of others are available, including mathematical and decorative fonts. To switch to a sans-serif type family (eg Helvetica, Avant Garde), use \sffamily in your text. To change font for a word or phrase, use these commands (they can be nested see below):

Italics	\textit{Hello}	Hello
Boldface	\textbf{Hello}	Hello
Smallcaps	<pre>\textsc{Hello} </pre>	Hello
Sans-serif	\textsf{Hello}	Hello
Monospace	<pre>\texttt{Hello} IIIII</pre>	Hello

Example: \textit{\textbf{\textsf {bold ital sans}}} IIII bold ital sans

Font sizing is automatic for titles, headings, and footnotes. There are some named step-size commands (in points, relative to the base size):

\normalsize	10	11	12	ce
\tiny	5	6	7	space
\scriptsize	6	7	8	save
\footnotesize	7	8	9	
\small	9	10	11	ere
\large	11	12	14	sizes rounded here to
\Large	12	14	17^{*}	nde
\LARGE	14	17^{*}	20*	rou
\huge	17^{*}	20*	24*	zes
\Huge	20*	24^{*}	28*	* si

but you can specify an exact size with the fix-cm package and the command $fontsize{pp}{bb}selectfont for any$ point-size (pp) on any baseline (bb).Group (enclose) the command with itsapplicable text in curly braces to prevent it affecting the rest of the document.For wider line-spacing (eg in theses) usethe setspace package. You can also usecolour with thexcolor package and Google $the \color{name} command.$

Lists

There are three basic kinds: **itemized** lists (bulleted); **enumerated** lists (numbered or lettered); and **descriptive** lists (topic-and-

explanation format). Others can be defined, or downloaded from CTAN [5].

\begin{itemize} \item 11b Sugar \item ½pt Cream \item Chocolate \end{itemize}	<pre>\begin{enumerate} \item Mix together \item Boil to 112°C \item Stir and cool \end{enumerate}</pre>	<pre>\begin{description} \item[Fudge] is fun \item[Broccoli] sucks \item[Exercise] is good \end{description}</pre>
1lb Sugar½pt CreamChocolate	 Mix together Boil to 112°C Stir and cool 	 Fudge is fun but not if made too often. Broccoli sucks, period. Exercise is good for you if taken daily and not to extremes.

You can nest lists inside each other. See packages like paralist and mdwlist to control list formatting.

Tables and figures

Formal tables and figures *float* (change position to fill available space) so they may not be printed where you typed them.

<pre>\begin{table} Mean growth rate and intakes of supplement, milk, and water for 4</pre>
diets.}
\label{dietgrowth}\centering
$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $
&Growth&Supplement&Milk&Water\\
$Supplement&rate&intake&intake&intake \setminus \$
&(g/day)&(g/day)&(ml/kg\$^{0.75}\$)&
$(ml/kg^{0.75}))$
Lucerne &145&450&10.5&144\\\hline
Sesbania&132&476& 9.2&128\\\hline
Leucaena&128&364& 8.9&121\\\hline
None & 89& 0& 9.8&108\\\hline
\end{tabular}
\end{table}

 Table 2: Mean growth rate and intakes of supplement,

 milk, and water for four diets (after Sherington, J, undated)

Supplement	Growth rate (g/day)	Supplement intake (g/day)	Milk intake (ml/kg ^{0.75})	Water intake (ml/kg ^{0.75})
Lucerne	145	450	10.5	144
Sesbania	132	476	9.2	128
Leucaena	128	364	8.9	121
None	89	0	9.8	108

Packages like longtable and array can help with more complex table formats.

For help, see the links on the front and back pages. There is a summary of common commands at www.stdout.org/~winston/latex/latexsheet.pdf and a comprehensive list at computing.ee.ethz.ch/ .soft/latex/green/ltx-2.html.

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 ETEX; but JPG, PNG, or PDF for pdfETEX)
\includegraphics[width=.8\columnwidth]{menno-a}
\\\scriptsize Courtesy of Paul C. Adams, Department of Geography and the
Environment, University of Texas at Austin. \cite{adams}\end{figure}

emigration to North America and Poland ukraine and Russia

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,² see below. Citations using BIBT_EX (Patashnik, 1988) are also 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 command and the makeindex program.

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References

- 1. Adams, Paul C. *Linguistic Chaos in Montreal*, www.utexas.edu/depts/grg/adams/chaos.ppt, 2/59, Oct 2006.
- 2. Flynn, P. Formatting Information, 2005, at latex.silmaril.ie/formattinginformation/
- 3. Patashnik, O. *BIBT_FXing*, T_FX Users Group, 1988 (distributed with all copies of MT_FX).
- 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
- 5. TeX Users Group, for TeX Live (www.tug.org/texlive/) and CTAN (Comprehensive TeX Archive Network) for downloads (www.ctan.org).

Note. Commercial implementations of T_EX with business support are available from Personal T_EX , Inc (PCT_EX); Blue Sky Research (Textures [Mac]); MacKichan Software, Inc (Scientific Word); Micropress, Inc (VT_EX), TrueT_EX Software (TrueT_EX), and others.

²Like this.