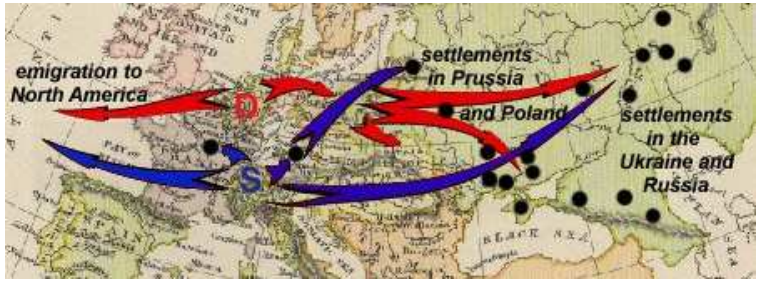
Tables and Figures, *continued*

```
\begin{figure}[ht]   ht specifies 'here' or 'top' if there is space
\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}
\\\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)

Footnotes are easy:[2] see below. Citations using BIBTEX (Patashnik, 1988) are also easy (see [2], §7.4.2) and there are formatting packages for journals and publishers. You can add indexes with the package makeidx, the `\index` command and the makeindex program.

```
Footnotes are easy:\footnote{Like this.} see below.  Citations using BIB\TeX{}
(Patashnik, 1988) are also easy (see [2], \S7.4.2) and there are formatting
packages for journals and publishers. You can add indexes with the package
\textsf{makeidx}, the \verb+\index+ command and the \textsf{makeindex} program.
 add the following at the end of your document and create myrefs.bib (see BIBTeX manual [3])
\bibliography{myrefs}\bibliographystyle{apacite}
```

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*, 2011, at `latex.silmaril.ie/formattinginformation/`**
3. Patashnik, O. *BIBTEXing*, TEX Users Group, 1988 (distributed with all copies of LATEX).
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`
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 TEX with business-level support are available from **Personal TEX, Inc** (*PCTEX*); **Blue Sky Research** (*Textures*); **MacKichan Software, Inc** (*Scientific Word*); **Micropress, Inc** (*VTEX*); and **TrueTEX Software** (*TrueTEX*).

[2] Like this.

The very short guide to typesetting with LATEX

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Textual Therapy Division
`latex.silmaril.ie`

January 2012

What's this all about? What's LATEX?

LATEX is a document preparation system for the TEX typesetting program. It enables you to produce publication-quality output with great accuracy and consistency. LATEX works on any computer and produces industry-standard PS or PDF documents. 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 a complex structure, repetitive formatting, or notations like mathematics[1]; or where technical stability, dimensional accuracy, or a persistent and non-proprietary file format are needed.

Creating and typesetting your document

1. Create your document using any suitable plain-text editor with LATEX controls, eg *TEXshop* (Mac), *TEXmaker* (all), *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.

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

- **All LATEX 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 2012` ➠ Copyright ©2012 ✗
  To prevent this, put empty curly braces after the command.
  Example: `Copyright \copyright{} 2012` ➠ Copyright © 2012 ✓
- **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 LATEX's power. For information, visit the TEX Users Group site (`www.tug.org`). For help, see the FAQ (`www.tex.ac.uk/faq`), the Usenet newsgroup `comp.text.tex`, and the site `tex.stackexchange.com`. For packages, use the Comprehensive TEX Archive Network (`www.ctan.org`). For documentation, use the sources in the *References* [2].

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

Basic document structure

Here's the skeleton of a LaTeX 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 `uccthesis`, `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** (LaTeX 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}
\tableofcontents
  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 control spacing and indentation separately 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 sectsty, titlesec, and other packages. Use the babel package for typesetting other languages.

```
  (Preamble, titling, and abstract as before)
\tableofcontents
\section{heading of a section}
  text for the section goes here
...as shown in section \ref{blah}.
\subsubsection{heading of a subsection}
  text for the subsection goes here
\section{heading of a new section}
\label{blah}    make up name for the label
  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: LaTeX 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

LaTeX's default typeface is Computer Modern, like this paragraph. There are a dozen or so built-in typeface packages including:

Face	Package	Face	Package
Times	`mathptmx`	Courier	`courier`
Palatino	`mathpazo`	Avant Garde	`avant`
Bookman	`bookman`	Helvetica	`helvet`
Charter	`charter`	*Zapf Chancery*	`chancery`
Utopia	`utopia`	Pandora	`pandora`

Many more can be downloaded, including mathematical, display, and decorative faces: see the LaTeX Font Catalog (`www.tug.dk/FontCatalogue/`). To switch type family, use `\sffamily` for sans-serif, or `\ttfamily` for monospace. To change font for a word or phrase, use these commands:

Italics	`\textit{Hello}`	*Hello*
Slanted	`\textsl{Hello}`	*Hello*
Bold Face	`\textbf{Hello}`	**Hello**
Small Caps	`\textsc{Hello}`	HELLO
Sans-serif	`\textsf{Hello}`	Hello
Monospace	`\texttt{Hello}`	`Hello`

Example: `\textit{\textbf{\textsf{bold italic sans}}}` ➠ ***bold italic sans***

Font sizing is automatic for titles, headings, and footnotes. There are some named step-size commands (in points, relative to the base type size, see p.2):

`\normalsize`	10	11	12
`\tiny`	5	6	7
`\scriptsize`	6	7	8
`\footnotesize`	7	8	9
`\small`	9	10	11
`\large`	11	12	14
`\Large`	12	14	17*
`\LARGE`	14	17*	20*
`\huge`	17*	20*	24*
`\Huge`	20*	24*	28*

* sizes rounded here to save space

You can also 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* its applicable text in curly braces to prevent it affecting the rest of the document. For wider line-spacing (eg in theses) use the setspace package. You can also use colour with the xcolor package and the `\color{`*name*`}` command.

Lists

There are three basic types: **itemized** (bulleted); **enumerated** (numbered or lettered); and **descriptive** (topic-and-explanation). Others can be defined, or packages downloaded from CTAN [5].

```
\begin{itemize}
\item 1lb Sugar
\item ½pt Cream
\item Chocolate
\end{itemize}

\begin{enumerate}
\item Mix together
\item Boil to 112°C
\item Stir and cool
\end{enumerate}

\begin{description}
\item[Fudge] is fun...
\item[Broccoli] sucks...
\item[Exercise] is good
\end{description}
```

- 1lb Sugar
- ½pt Cream
- Chocolate

1. Mix together
2. Boil to 112°C
3. 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.

```
\begin{table}[hbtp]   positional specifiers
\caption{Mean growth rate and intakes
of supplement, milk, and water for 4
diets.}\label{dietgrowth}\centering
\begin{tabular}{|l|r|r|r|r|}\hline
&Growth&Supplement&Milk&Water\\
Supplement&rate&intake&intake&intake\\
&(g/day)&(g/day)&(ml/kg$^{0.75}$)&
(ml/kg$^{0.75}$)\\\hline
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`.