

Basic document structure

Here's the basic skeleton of a \LaTeX document. These three lines are *compulsory*: your document will not work without them:

```
\documentclass[a4paper,11pt]{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 another class you have installed (eg `ucotthesis`, `memoir`, etc).
- The optional paper size can be `a4paper` (210mm×297mm) or `letterpaper` (8½" × 11"). There are others as well (eg `a5paper`).
- Optional body font size can be 10pt (default), 11pt, or 12pt.

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 (see the next section for examples of fonts, graphics, and indentation).

Front matter

This is how you specify the title, author, date, abstract, and (optional) table of contents:

```
\documentclass[a4paper,11pt]{report}
\usepackage{times,graphicx}
\setlength{\parindent}{1em}
\begin{document}
\title{your name}
\author{your document title}
\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}
```

Leave a blank line to signal the end of a paragraph (this does *not* mean you get a blank line typeset, it just

means 'start a new paragraph': \LaTeX will format it according to the style you are using: normal typesetting has no space between paragraphs).

Sectioning and cross-referencing

Sections and sub[`sub`]sections get numbered automatically in bold type, and get included in the Table of Contents (if any). Numbering can be turned off selectively.

```
(Preamble, titling, and abstract as before)
\tableofcontents
\section{heading of a section}
  text for the section starts here
...as we will see in section \ref{stuff}.
\subsection{heading of a subsection}
  text for the subsection starts here
\section{heading of a new section}\label{stuff}
  text for the section starts here
\end{document}
```

To add a cross-reference, label the target with `\label{...}` and use `\ref{...}` or `\pageref{...}` to refer to it. Example: Figure `\ref{langmig}` on p.`\pageref{langmig}`. \blacktriangleright Figure 1 on p.4.


Typefaces

\LaTeX comes with `cmr` (Computer Modern, the default), `pandora`, the usual Adobe '35' (times, helvetica, palatino, etc), plus a selection of decorative and specialist typefaces including a full set of mathematical fonts. To change the base typeface, add `\usepackage{name}` to your Preamble. To change font for a word or phrase, use these commands:

Italics	<code>\textit{Hello World!}</code>	\blacktriangleright	<i>Hello World!</i>
Boldface	<code>\textbf{Hello World!}</code>	\blacktriangleright	Hello World!
Smallcaps	<code>\textsc{Hello World!}</code>	\blacktriangleright	HELLO WORLD!
Sans-serif	<code>\textsf{Hello World!}</code>	\blacktriangleright	Hello World!
Monospace	<code>\texttt{Hello World!}</code>	\blacktriangleright	Hello World!

These commands can be nested, eg ***bold italic sans*** with

```
\textit{\textbf{\textsf{bold italic sans}}}
```

Font size is automatic for titles, headings, and footnotes. There are more commands for changing size and colour, eg 

Lists

There are three basic kinds: **itemized** lists (random order with bullets); **enumerated** lists (in order with digits or letters); and **descriptive** lists (topic-and-explanation format).

<pre>\begin{itemize} \item Sugar \item Cream \item Chocolate \end{itemize}</pre>	<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>
<ul style="list-style-type: none">• Sugar• Cream• Chocolate	<ol style="list-style-type: none">1. Mix together2. Boil to 112°C3. Stir and cool	<p>Fudge is fun but fattening if made too often. Broccoli sucks, period. Exercise is good for you if not taken to extremes.</p>

You can nest lists inside each other (bullets and numbering systems automatically adapt).

Tables and figures

Formal tables and figures *float* (change position to fill available space).

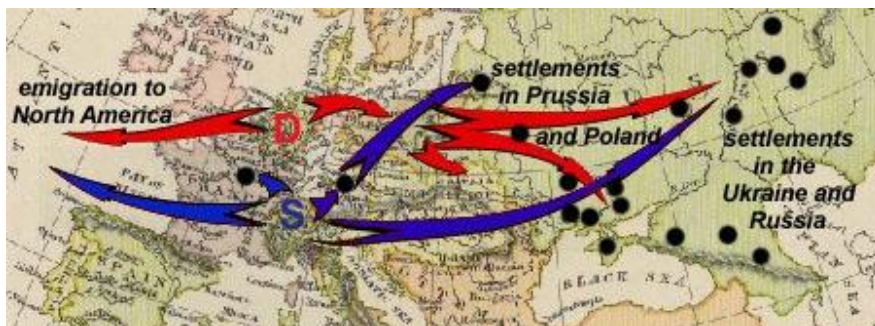
```
\begin{table}
\caption{Mean growth rate and intakes of supplement, milk, and water for 4 diets.}
\label{dietgrowth}\begin{center}
\begin{tabular}{|l|r|r|r|r|}\hline
&Growth&Supplement&Milk&Water\\
&Supplement&&rate&intake&intake\\
&(g/day) & (g/day) & (ml/kg$^{0.75}$) & (ml/kg$^{0.75}$) & (ml/kg$^{0.75}$)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

```
\begin{figure}
\caption{Swiss and Dutch Mennonite migrations of the 1700s and 1800s \cite{adams}}
\label{langmig}
\begin{center} (graphics must be in EPS format for standard LATEX; JPG or PDF for pdfLATEX)
\includegraphics[width=.9\columnwidth]{menno-a}
\\ \tiny Courtesy of Paul C. Adams, Department of Geography and the Environment,
University of Texas at Austin.
\end{center}
\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 and references

Footnotes are done with a simple command,¹ see below. Citations using BIB_TE_X (Patashnik, 1988) are also simple (see [2], 7.4.2) but there are style packages capable of more complex formats, especially for journals and publishers.

```
Footnotes are done with a simple command, \footnote{Like this.} see below. Citations
using BIB\TeX{} \citeauthor{oren} are also simple (see \cite{flynn}, \S7.4.2)
but there are style packages with more complex formats, especially for journals
and publishers.
add the following at the end of your document and create myrefs.bib (see BIBTEX documentation)
\bibliography{myrefs} \bibliographystyle{apalike}
```

References

1. Adams, Paul C. *Linguistic Chaos in Montreal*, <http://www.utexas.edu/depts/grg/adams/chaos.ppt>, 2/59, Oct 2006.
2. Flynn, P. *Formatting Information*, UCC EPU, 2005, <http://latex.silmaril.ie>
3. Patashnik, O. *BIB_TE_Xing*, T_EX Users Group, 1988.
4. Sherington, J. example table in 'Informative Presentation of Tables, Graphs and Statistics', 4.2, Statistical Services Centre, University of Reading, <http://www.reading.ac.uk/ssc/publications/guides/toptgs.html>
5. T_EX Users Group, T_EX Live software on CD/DVD, <http://www.tug.org>

¹Like this.

The very short guide to typesetting with L^AT_EX

UCC Computer Centre
Electronic Publishing Unit

<http://epu.ucc.ie>

January 2007

Syntax

- ☞ All L^AT_EX commands begin with a backslash.
Example: `\tableofcontents`
- ☞ If a command takes an argument (information to work with), the argument must follow the command, in curly braces.
Example: `\author{Peter Flynn}`
- ☞ Some commands have optional arguments: if used, they go in square brackets, before any compulsory arguments.
Example: `\documentclass[a4paper]{book}`
- ☞ Space following commands with no arguments gets suppressed.
Example: `Copyright \copyright 2007` \rightsquigarrow `Copyright ©2007`
To print a space, follow such commands with empty curly braces before the space.
Example: `Copyright \copyright{} 2007` \rightsquigarrow `Copyright © 2007`

Typesetting

1. Create your document using a suitable editor (preferably one with L^AT_EX controls such as those supplied with the T_EX Live CD/DVD [5]);
2. Save the file with a name ending in `.tex` (never use spaces in filenames);
3. Click on the or button or menu item to process the file;
4. Click on the or button to display the typeset output.

Notes For reasons of space this guide does not cover mathematics typesetting. This guide shows only a small fraction of what L^AT_EX can do: there are many more features for which there is no room here.