

LaTeX Crash Course

Meeting 1: Introduction and Basic Commands

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The Structure of a LaTeX Document

Preamble The initial part of the document where you specify the document type (article, book, letter, ...), load required packages, define new commands and specify document settings (font size, line spread, list settings, page geometry, indentation, etc.).

Body Everything between `\begin{document}` and `\end{document}`. Contains the text of your document, together with markups, commands, tables, figures, equations, etc.

In the following, we will use `article` as our default document class.

The First Line

In the square brackets after `\documentclass`, you specify the paper format (e.g., `a4paper`) and the font size (e.g., `11pt`). The `article` document class accepts only 10, 11 or 12 point—for anything else, you need to load extra packages. (But why would you want to write your paper in a different font size?) LaTeX then calculates all required font sizes that differ from the default setting (e.g., for footnotes or references) relative to your global settings.

Packages

For the moment, you do not need to load many packages. The standard command is `\usepackage[]{}{}`, where the options are in square brackets and the packages in curly brackets. I recommend to load `inputenc` with option `utf8` (unicode), so you can read umlaute and other characters with diacritics.

Another practical thing is the `babel` package where you specify the language of the document in square brackets. This helps with hyphenation and

with general language settings (e.g., whether a table will be called “Table 1” or “Tabella 1”).

Spacing

LaTeX automatically indents the first line of all paragraphs (apart from the first one of a section). Believe me, this is a good thing typesetting-wise. If you really don’t want this, you can change this in the preamble setting `\parindent=0pt` (or any other value you like).

You may also want larger than normal line spread. Proportional line feeding is obtained by writing the factor into the argument of `\linespread{}`, e.g., `\linespread{1.15}` for 115%.

In the body of the document, you have numerous commands for adding space or turning pages, such as `\bigskip`, `\pagebreak`, `\newpage`, etc.

Document Name and Author

You specify both of them using the `\title{}` and `\author{}` commands in the preamble. The names of the title and the author(s) should be put as arguments into the curly brackets. Then call `\maketitle` at the beginning of the body to create a title.

Document Structure

We are now moving to the body of your document. LaTeX has a predefined structure for each document class. For `article`, the main level of document structure is `section`, followed by `subsection` and `subsubsection`. (You don’t want a deeper hierarchy.) By default, (sub)sections are numbered, but if you add a star to the command, e.g., `\section*{}`, you create an unnumbered section. Similarly for `\subsection*{}` etc. You choose!

The `book` class, by contrast, has `chapter` as a main level, followed by `section` and `subsection`. Good to know for your MA or PhD thesis.

Cross References

One of the greatest things about LaTeX is that you can automatically refer to almost all elements in the document: sections, figures, equations, tables, quotes, footnotes, etc. Just add a `\label{abc}` where needed (e.g., behind the `\section{Theory of Bullshit}` command). If you then call that label later, e.g., with “As I explained in Section `\ref{abc}`”, the output of `\ref{abc}` will be the current number of the section “Theory of Bullshit” in

your document. No need to update the section number manually when you change the document structure!

Similarly, if you write “As I explained on page `\pageref{abc}`”, the output of `\pageref{abc}` will be the page number of the pdf document where the `abc` label is placed.

Table of Contents

Very simple. `\tableofcontents` wherever you want it to appear. You decide yourself about the depth of the table of contents, i.e., whether it shows only sections, or also subsections, etc.

Highlighting and Special Characters

For all of the options below, the modified text has to be in the curly brackets.

Boldface `\textbf{}`

Italics `\textit{}`

Underlining `\underline{}`

For some special characters like `%`, `#`, etc., that have specific functions in LaTeX (e.g., `%` comments out the rest of the line), you need to add a backslash for making them appear in the text. That is, you write `\%`, `\#`, etc.

Subscripts and superscripts will be dealt with in the second meeting!

Footnotes and Endnotes

Very simple. Just write `\footnote{}` and put the content of your footnote into the curly brackets. LaTeX takes care of the placement and numbering of the footnotes. You can also refer to footnotes: just add a `\label{fn}` to the right of the footnote. When you call it with `\ref{fn}`, the output will be the number of the footnote.

For endnotes, you should add two lines to your preamble: `\usepackage{enotez}` and `\let\footnote=\endnote` to your preamble. Just use the `\footnote` command in the body of the text, as before, and add `\printendnotes` at the end of the document, where you want them printed. The “footnotes” will now appear as endnotes.

Quotations

There are two environments for quotations (both are fine):

- `\begin{quote} ... \end{quote};`
- `\begin{quotation} ... \end{quotation}.`

Use `quote` for a short quotation, or a series of small quotes, separated by blank lines. Use `quotation` with longer quotations, of more than one paragraph, because it indents the first line of each paragraph. Using `\footnotesize` or `\small` at the beginning of the quotation, you can make the text smaller than the main text. Some readers appreciate this and I like it myself.

Lists

Basically you have three environments:

- `\begin{itemize} \item ... \end{itemize}` for unnumbered lists like this one;
- `\begin{enumerate} \item ... \end{enumerate}` for numbered lists;
- `\begin{description} \item ... \end{descriptions}` for lists where each item is preceded by a short description in bold.

For configuring lists, you should call the `enumitem` package in the preamble. For example, you can configure the options of `itemize` to yield bullet points, squares, etc., and `enumerate` to get arabic numbering, roman numbering, normal/square/no brackets, start with a number different from one, etc. Nested lists (“lists within lists”) are also allowed.

You can control the white space between list items with `\setlist{itemsep=...}` in the preamble, where the dots correspond to the your preferred distance (e.g., 0pt in this case).

Figures, Tables, Diagrams, Formulas

Will be explained in the second meeting!

Indexing and Bibliography

Two of the coolest features of LaTeX, to be explained in the third meeting. Stay tuned!