

# Cheatsheet for the GSNS L<sup>A</sup>T<sub>E</sub>X Workshop

T<sub>E</sub>XniCie, A-Eskwadraat

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This document is intended as a summary of the workshop which can be useful at later times to refresh your memory. It also includes a few things which we didn't have time for in the workshop but which are still very useful when actually using L<sup>A</sup>T<sub>E</sub>X.

**Basics** A L<sup>A</sup>T<sub>E</sub>X file starts with `\documentclass{article}`. There are options for other document classes, such as `book` or `report`. The file first contains preamble (with `\usepackage{...}` calls) and then the document itself, encased in `\begin{document} ... \end{document}`.

The `documentclass` also has optional arguments; example options are `twocolumn` for two columns and `[12pt]` for a larger font. Multiple commands are separated by a comma, e.g. `\documentclass[twocolumn, 12pt]{article}`.

The `babel`, `geometry`, `graphicx`, `amssymb` and `amsmath` packages are recommended. The `babel` and `geometry` packages work best with optional arguments; syntax `\usepackage[optional]{package}`.

A title can be made with `\maketitle`, which requires you give an `\author{}` and `\title{}`. A `\date{}` is optional. A table of contents can be made using `\tableofcontents` and requires an extra time compiling to fully work.

Accented letters can be created by putting the corresponding accent-command in front of the letter, e.g. `\'o` for `ó`. The accents are given by `'`, `´`, `¨`, `ˆ` and `˜`.

Some symbols have meaning in L<sup>A</sup>T<sub>E</sub>X; to print the symbol include a `\` in front of it, e.g. `\$`. Exception is the backslash itself: `\textbackslash`.

**Paragraphs and Listings** Headings can be made using the commands `\chapter`, `\section`, `\subsection`, `\subsubsection`, `\paragraph`. The `\chapter` command is only available in some document classes. The `\paragraph` command gives no table of contents entry, the `\subsection` might or might not depending on other settings. The `\appendix` command clarifies that all later chapters/sections are appendices and are to be numbered differently.

Paragraph manipulation happens through `\` (or `\newline`), `\par` (or double enter) and

`\bigbreak`. Page manipulation through `\newpage` and `\clearpage`. Out of these, `\par`, `\bigbreak` and `\clearpage` are recommended for daily use.

The listings are `itemize`, `enumerate` and `description`. The syntax is `\begin{itemize} \item ... \item ... \end{itemize}` and for `description` each `\item` needs an entry of the form `\item[entry]`.

**Mathematics** Math mode can be opened via `\( ... \)` or `$ ... $` for *inline* math and `\[ ... \]` or `$$ ... $$` for *display* math. *Inline* is recommended for smaller or unimportant formula, otherwise *display* is preferred.

Numbers and operations like plus and minus work as expected. Multiplication uses `\times` or `\cdot` (centre dot). Sub- and superscript uses a hat `^` (Shift 6) respectively a dash `_` (Shift minus).

Commands use a abbreviation for their name, like `\sqrt[power]{number}`, `\log<number>` or `\infty`. Greek letters use the English name for the letter, `\lambda`. For a comprehensive list see CTAN or use detexify by Kirelabs. A final helpful reference is wikibooks.

For automatically scaling parentheses use `\left( ... \right)`, this also works for other brackets.

**AMSMath** gives more options for `displaymath`, like `align` and `equation`. It can also be used for vectors and matrices, see the AMSmath documentation or search 'latex matrix' with your favourite search engine. We also recommend `amssymb` for it gives many symbols as well as math fonts like  $\mathbb{R}$  (`\mathbb{R}`).

**Pictures** The basic command to include pictures is `\includegraphics`, e.g. `\includegraphics[scale=0.4]{picture.png}`. Size regulation can be done by `scale=<number>` or `width=<value>`. For `width` it is useful to use `0.4\linewidth` or similar.

Use `\begin{figure}[htp] ... \end{figure}` around the picture for a more natural placement.