

Course in L^AT_EX

Motivation

- ▶ Instead of being your own typesetter, you may offset much of it to the computer
 - ▶ Philosophy: Separate presentation and content
 - ▶ Maxim: Let the typesetting engine handle it
- ▶ Mathematical typesetting looks beautiful
- ▶ Figures and tables are sensibly structured
- ▶ Bibliographies are handled well
- ▶ Lends itself better to large documents (dissertations and books)

Document Structure

- ▶ Preamble
- ▶ Frontmatter
 - ▶ Title
 - ▶ Table of Content
 - ▶ List of Figures/Tables
- ▶ Main document
 - ▶ Sections/Chapters
 - ▶ Text
 - ▶ Math
 - ▶ Figures
 - ▶ Tables
- ▶ Bibliography
- ▶ Appendices

Document Setup

- ▶ `\documentclass`
- ▶ Preamble with `\input`
- ▶ Document body with `\begin{document}`
 - ▶ This is an environment
- ▶ Frontmatter with `\maketitle`
- ▶ Sections with `\input`
- ▶ Bibliography with `\bibliography`
- ▶ Appendices with `\appendix`

Part 0: Preamble

- ▶ `\usepackage`
- ▶ Custom commands
 - ▶ Any `\newcommand` could go here
- ▶ Setup for packages and the entire document

Part 1: Content

- ▶ Content and presentation are “mostly separate”
 - ▶ Which type some content is must be specified in the raw content
 - ▶ How to present this “type” is defined elsewhere

Environments and displays

- ▶ Document
- ▶ Math
- ▶ Figure
- ▶ Table
- ▶ List
- ▶ Quote
- ▶ Bold/Italics

Normal Text

- ▶ Headings
 - ▶ `\section` and `\subsection`
- ▶ Lists
 - ▶ `itemize`
 - ▶ `enumerate`
 - ▶ Nesting
- ▶ Maxim: One sentence, one line
 - ▶ Makes version control better

Math

- ▶ Equation
- ▶ Gather
- ▶ Align
- ▶ Symbols

Figures and Tables

- ▶ Figure

- ▶ `\includegraphics`

- ▶ `\caption`

- ▶ `\label`

- ▶ Table

- ▶ `\begin{tbluar}`

- ▶ Columns and separation

- ▶ Rows and `\hline`

Referencing

- ▶ `\usepackage{biblatex}`
 - ▶ Styling and other options
- ▶ Sources in the preamble with `\addbibresource`
 - ▶ To define sources before they're used
- ▶ `\printbibliography`
 - ▶ Several options here as well

Appendices

- ▶ `\usepackage{appendix}`
 - ▶ To have appendix available
- ▶ `\appendix` changes the entire document context
 - ▶ `\section` is now an appendix, not a “chapter”

Part 2: Presentation

- ▶ The TeX-engine is powerful and can typeset many things
- ▶ Environments inform presentation
- ▶ Displays inform presentation

Linebreaks and pagebreaks

- ▶ `\\` forces linebreak
 - ▶ Used in tables, matrices and multiline math
 - ▶ Also used to force air between paragraphs, but be careful
- ▶ `\newpage` forces the rest of a page to be empty
- ▶ `\mbox` forces words to stay together, no hyphenation
 - ▶ The `~` character can be used as non-breaking space

vspace and hspace

- ▶ `\vspace` is vertical spacing
- ▶ `\hspace` is horizontal spacing
- ▶ Valid space lengths are
 - ▶ `cm`, `mm`, `em`, `pt`, `ex`, `mu`, `sp`
- ▶ Lengths may be negative

Default and documentwide lengths and widths

- ▶ `\parskip` and `\parindent`
- ▶ `\baselinestretch`
- ▶ `\setstretch` and `\itemsep`

Math - display style

- ▶ `\textstyle` is inline amidst text
- ▶ `\displaystyle` is in its own “box”
- ▶ `\scriptstyle` is when it is nested in sub/superscript
- ▶ `\scriptscriptstyle` is when it is in the second order script

Figures and tables

- ▶ `[width=\textwidth]` and other things
- ▶ `width` and `angle`
- ▶ `[!htbp]`
 - ▶ Here, top, bottom, special “page”
- ▶ Floats
 - ▶ They float around and cannot be broken up

Part 3: Custom Commands

- ▶ `\newcommand`
 - ▶ Partial derivatives
 - ▶ Vectors
 - ▶ Better itemizes
 - ▶ Easy units
 - ▶ Anything

Further Reading

- ▶ Everything on Overleaf.com
- ▶ Documentation for packages on CTAN
- ▶ StackExchange
- ▶ Maxim: Keep It Simple, Stupid
 - ▶ Try to avoid *more* packages