

Structuring Research with Overleaf

A Hands-on Workshop on Academic Writing

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Abstract

This document serves as a comprehensive reference guide for the Overleaf/L^AT_EX workshop. It includes essential L^AT_EX commands, shortcuts, and helpful resources for academic writing. Keep this document handy as you learn to create and structure professional research documents.

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1 Document Structure Commands

The foundation of any \LaTeX document is its structure. Below are the essential commands to set up your document framework.

```
% Basic document structure
\documentclass[12pt, a4paper]{article} % Sets document type
and options
\usepackage{package_name} % Loads additional functionality

\title{Your Paper Title}
\author{Your Name}
\date{\today} % Automatically inserts current date

\begin{document}
\maketitle % Creates the title based on information above

\begin{abstract}
  % Your abstract text goes here
\end{abstract}

\section{Introduction} % Creates a numbered section
\subsection{Background} % Creates a numbered subsection
\subsubsection{Details} % Creates a numbered subsubsection

\section*{Acknowledgments} % Creates an unnumbered section

\end{document}
```

Common document classes:

- **article**: For journal articles, short reports, documentation, etc.
- **report**: For longer documents with chapters, such as a thesis
- **book**: For books
- **beamer**: For presentations

2 Text Formatting Commands

\LaTeX provides precise control over text appearance and organization.

```
% Basic text formatting
\textbf{Bold text} % Bold
\textit{Italic text} % Italic
\underline{Underlined text} % Underline
\texttt{Monospace text} % Typewriter/code font

% Lists
\begin{itemize}
  \item Bullet point % Unordered list
\end{itemize}

\begin{enumerate}
  \item Numbered item % Ordered list
\end{enumerate}

% Special characters
\& \% \$ \# \_ \{ \} % Escape special characters
```

3 Mathematical Content

L^AT_EX excels at typesetting mathematics with precise notation and formatting.

```
% Inline math
$E = mc^2$ % Math within text

% Displayed equations
\begin{equation}
  \label{eq:example} % Add reference label
  f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}
\end{equation}

% Common math symbols
\sum_{i=1}^n % Summation
\int_a^b % Integral
\frac{numerator}{denominator} % Fractions
\sqrt{x} % Square root
\left( \right) % Automatically sized parentheses
```

4 Tables and Figures

Visual elements enhance comprehension and illustrate key points in your research.

```

% Basic table
\begin{table}[htbp] % h=here, t=top, b=bottom, p=page
  \centering % Center the table
  \caption{Table caption} % Add caption
  \label{tab:example} % Add reference label
  \begin{tabular}{l|c|r} % l=left, c=center, r=right align,
    |=vertical line
      Left & Center & Right \\
    \hline % Horizontal line
      Data & Data & Data \\
  \end{tabular}
\end{table}

% Figure inclusion
\begin{figure}[htbp]
  \centering
  \includegraphics[width=0.8\textwidth]{filename} % Include
  image
  \caption{Figure caption}
  \label{fig:example}
\end{figure}

```

5 Citations and References

Proper citation is crucial for academic integrity and crediting original sources.

```

% In preamble (before \begin{document})
\usepackage{natbib} % or \usepackage{biblatex}

% In document
\cite{key} % Basic citation
\citep{key} % Citation in parentheses (natbib)
\citet{key} % Citation with author (natbib)

% Reference to labeled items
Section~\ref{sec:label} % Reference section
Equation~\eqref{eq:label} % Reference equation
Figure~\ref{fig:example} % Reference figure

% Bibliography
\bibliographystyle{plain} % Citation style
\bibliography{yourbibfile} % BibTeX database file (.bib)

```

6 Overleaf Keyboard Shortcuts

Master these shortcuts to increase your productivity:

Shortcut	Function
Ctrl+F	Find
Ctrl+G	Find next
Ctrl+Space	Autocomplete
Ctrl+Z	Undo
Ctrl+Y	Redo
Ctrl+/	Comment/uncomment selected text
Ctrl+D	Delete line
Alt+Up/Down	Move line up/down
Ctrl+Click	Jump to definition/reference
Ctrl+S	Save project

Table 1: Common keyboard shortcuts in Overleaf

7 Helpful Resources

7.1 Official Documentation

- [Overleaf Documentation](#) - Comprehensive guides and tutorials
- [LaTeX Project](#) - Official L^AT_EX documentation
- [Comprehensive TeX Archive Network \(CTAN\)](#) - Repository for L^AT_EX packages

7.2 Learning Resources

- [Overleaf Learn L^AT_EX in 30 minutes](#)
- [L^AT_EX Wikibook](#) - Free L^AT_EX reference guide
- [Detexify](#) - Draw a symbol to find its L^AT_EX command

7.3 Templates

- [Overleaf Templates Gallery](#)
- [Academic Journals Templates](#)
- [Thesis Templates](#)

7.4 Useful Tools

- [JabRef](#) - BibTeX reference manager
- [Zotero with Better BibTeX extension](#) - Reference management
- [LaTeX Table Generator](#) - Create tables visually
- [LaTeX Equation Editor](#) - Interactive equation editor

8 Workshop Exercises

Practice these exercises to reinforce your learning:

1. Create a document with title, abstract, and three sections
2. Format a paragraph with bold, italic, and underlined text
3. Create an equation with fractions and Greek symbols
4. Insert a table with three columns and four rows
5. Add a citation and reference list using BibTeX

9 Research Paper Templates

Overleaf offers numerous templates for different research paper formats and journal requirements. Below are carefully curated links organized by field and type.

9.1 General Research Paper Templates

- [IEEE Conference Template](#)
- [Simple Journal Template](#)
- [APA Style Format \(7th Edition\)](#)
- [Springer Conference Proceedings](#)
- [ACM Conference Proceedings](#)

9.2 Field-Specific Templates

- **Computer Science**
 - [NeurIPS Conference Template](#)
 - [ACL \(Computational Linguistics\) Template](#)
 - [SIGPLAN Proceedings Template](#)

- **Physics & Mathematics**
 - [American Physical Society \(APS\) Template](#)
 - [American Mathematical Society \(AMS\) Template](#)
 - [Journal of High Energy Physics Template](#)
- **Life Sciences & Medicine**
 - [Nature Portfolio Journals Template](#)
 - [Elsevier Template](#)
 - [PLOS \(Public Library of Science\) Template](#)
- **Social Sciences & Humanities**
 - [Chicago Style Article Template](#)
 - [American Sociological Association Template](#)
 - [MLA Style Template](#)

9.3 Thesis & Dissertation Templates

- [Masters/Doctoral Thesis Template](#)
- [Oxford University Thesis Template](#)
- [Cambridge University PhD Thesis Template](#)
- [Stanford University PhD Thesis Template](#)

10 Beyond Research Papers: What Else Can You Create in Overleaf?

Overleaf is versatile beyond academic publishing. Here are other document types you can create:

10.1 Presentations

- [Beamer Presentation Template](#)
- [Metropolis Beamer Theme](#)
- [Fancy Beamer Template](#)

10.2 Scientific Posters

- [Landscape Beamer Poster Template](#)
- [Better Scientific Poster](#)
- [A0 Horizontal Poster Template](#)

10.3 Resumes & CVs

- [ModernCV Classic Style](#)
- [Awesome CV](#)
- [Data Scientist Resume](#)
- [Academic CV Template](#)

10.4 Books & Long-form Documents

- [Masters/Doctoral Thesis](#)
- [Legrand Orange Book Template](#)
- [Memoir Book Template](#)
- [Tufte-Style Book Template](#)

10.5 Letters & Correspondence

- [Formal Letter Template](#)
- [Cover Letter Template](#)
- [Academic Recommendation Letter](#)

10.6 Other Creative Documents

- [Cheat Sheet Template](#)
- [Exam Template](#)
- [Invoice Template](#)
- [Restaurant Menu Template](#)
- [Online Tutorial Template](#)
- [Lab Notebook Template](#)
- [Feynman Diagram Template](#)

10.7 Creative & Educational Tools

- [TikZ Graph Examples](#)
- [High-Quality Plot Generation](#)
- [UML Diagrams with TikZ-UML](#)
- [Gantt Chart using pgfgantt](#)