

TeXpress Documentation

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Introduction

Students often face a difficult choice when taking notes: write quickly and produce notes that are difficult to read later, or focus on writing carefully, and fall behind or lose focus during class. Traditional note-taking methods often leave students compromising on one or the other, leading to frustration and inefficiency.

TeXpress addresses this challenge by integrating \LaTeX , a widely used document formatting tool, with large language models (LLMs) such as ChatGPT. This system uses prompt-engineering and a custom syntax to allow users to create clear, professional, and editable notes at the speed required during lectures or meetings. By combining automation with structured formatting, **TeXpress** bridges the gap between efficiency and quality, offering a solution tailored to modern learning environments.

This system offers a significant improvement over traditional handwritten notes. Notes taken with **TeXpress** are legible, professional in appearance, and easy to edit or update. They can be exported as PDFs for consistent formatting, shared with peers or instructors, and printed for physical reference, all while remaining completely free to use. The only prerequisites for using **TeXpress** are:

- **A typing speed greater than 80 words per minute** to ensure that users can keep up with the pace of lectures or discussions while entering text efficiently. For those who type slower, some practice with typing exercises or speed drills may help achieve this benchmark.
- **A basic understanding of mathematical precedence (PEMDAS) and parentheses**, important for structuring equations and logical expressions within \LaTeX , so that the output matches the intended sequence without errors.
- **The ability to describe charts, diagrams and other visual elements in text:** Since \LaTeX is primarily text-based, users need to translate visual information into written descriptions that accurately capture their structure and content. This skill is particularly important for creating diagrams or explaining relationships within data sets.

While experience with coding or markup languages like HTML, JavaScript, or C++ can make learning **TeXpress** easier, it is not required. Many users quickly pick up the necessary skills through practice, even without a technical background.

The creation of this documentation is driven by a commitment to open source principles, accessibility to knowledge, and the belief that effective tools should enhance learning for everyone. Users are encouraged, though not required, to share the notes they create with **TeXpress**, use them to teach others, or publish them publicly for broader benefit. Proper credit to LaTeX formatting and the **TeXpress** system is recommended, along with links to these tools, to help others adopt and benefit from this method.

This document serves as a guide to using **TeXpress** effectively. It explains how to write prompts for LLMs like ChatGPT to generate L^AT_EX -formatted notes, create and organize sections logically, and format equations, matrices, diagrams, and other types of content. Additionally, it provides practical tips for optimizing page layout, managing line and column breaks, and using styles like bold, italic, or bullet points for emphasis and clarity. Periodic updates will expand the guide to address new techniques and use cases as the system evolves.

The goal of **TeXpress** is not to replace note-taking with automation but to enhance the transcription process. By reducing the effort required to format and organize notes, this system helps users focus on active learning and engagement with the material. The result is a set of notes that are accurate, legible, and easy to review, ensuring they serve as an effective resource for learning and collaboration.

1 Using Prompt Engineering with LLMs

Overview of this section

This section provides guidance on using a custom setup of ChatGPT—referred to here as "TeX-GPT"—to effectively generate \LaTeX content. It covers:

- Structuring prompts to achieve accurate \LaTeX output.
- Techniques for generating and organizing lecture notes in real time.
- Tips for making iterative adjustments to improve the output.

By the end, you will have a streamlined approach to utilizing AI for dynamic \LaTeX generation.

1.1 Setting Up "TeX-GPT"

In order to leverage ChatGPT's (or another capable LLM) potential to write \LaTeX -formatted content effectively, it is crucial to set up an environment where the model understands your syntax and intent clearly.

To begin, open a new session with your LLM and use the following setup prompt (or customize it as needed):

Setup Prompt

```
Generate LaTeX code only, interpret text within parentheses as commands for syntax, structure, or math such as (newline)=line break, (hrulefill)=horizontal rule, (multicols){n}=n-column layout, (center)=center alignment, (begin tikz)=start tikzpicture, (end tikz)=end tikzpicture, subscripts a(sub)b as \({a}_b\), superscripts a(sup)b as \({a}^b\), fractions frac(a,b)=\(\frac{a}{b}\), square roots sqrt(a)=\(\sqrt{a}\), integrals int(a,b)=\(\int_a^b\), summations sum(a,b)=\(\sum_a^b\), follow PEMDAS for math, align equations with align* using (newline) for breaks, default to unnumbered sections/subsections (use subsection*), omit headers like documentclass or begin (document) unless specified, infer structures like (itemize) for lists, (enumerate) for numbered lists, and (tabular){n} for tables. Readable, indented code ready for copy-paste without unnecessary comments unless clarifying syntax ambiguity.
```

Once this setup is provided, the model is primed to handle \LaTeX -related requests effectively. You can then begin using structured prompts for generating specific content, as described in the next sections.

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2 Formatting and Organization Techniques

Best practices for organizing sections, using styles, optimizing layout, and handling diagrams.

3 Exporting and Sharing Notes

Steps for exporting to PDF, printing, and sharing LaTeX files effectively.

4 Common Errors and Debugging in TeXpress

Troubleshooting LaTeX issues, prompt syntax errors, and inconsistencies in LLM outputs.

5 Advanced Applications and Libraries

Using external libraries, advanced layouts, and incorporating charts and diagrams.

6 Periodic Updates and Expanding the System

Keeping documentation updated, adapting to new use cases, and integrating feedback.

7 Conclusion

The value of clear notes, active learning, and collaboration in note-taking.