

Welcome to Grad School L^AT_EX Workshop

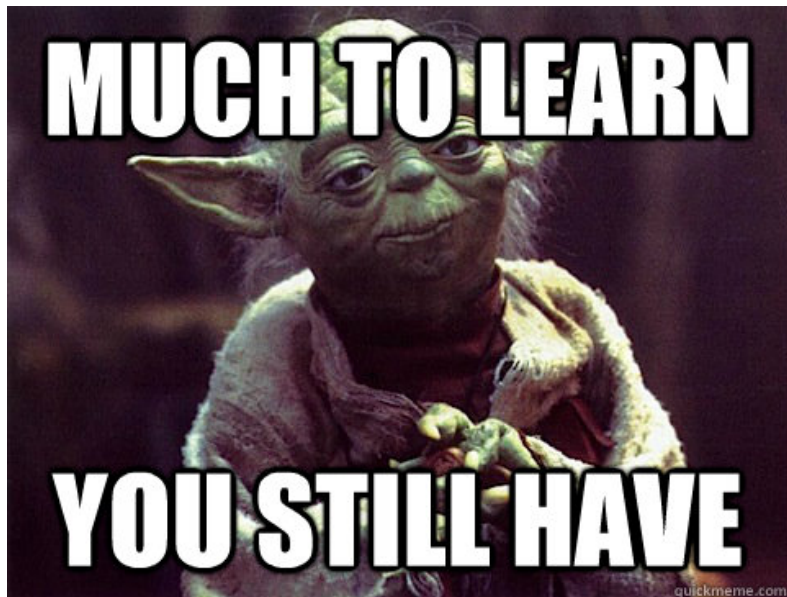
Texas Tech Grad School Intro 2016

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If you thought we were done...



Introduction

Goals

By the end of this session, you should be able to:

- Install and load packages
- Know how to get **help**
- Do a basic \LaTeX document
- Find additional materials
- Start playing with \LaTeX

What is T_EX?

- T_EX is a computer program for typesetting documents.
- It takes a computer file -properly prepared- and converts it to a document.
- This produced document is easily transferable across systems and platforms without changes to the 'look'.
- Open Source: This means free!

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What is L^AT_EX?

- A typesetting environment, one of a number of 'dialects' of T_EX.
- Particularly suited to the production of long articles and books.
- Better for complex equations than typical word processors

About L^AT_EX

Why Use L^AT_EX?

- An adaptable platform.
- Free!!! Complete with materials.
- Fast becoming language of stats. → SIGNALING!!!

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Learning L^AT_EX

- Steep learning curve (with high returns to investment)!
- Like any language, it requires practice.
- There are many paths to the same results.
- No one knows all of L^AT_EX, we just wing it at some level.
- Be prepared for a lot of trial and error and always read L^AT_EX documentation as you go.

LATEX

YOUR PAPER MAKES NO GODDAMN SENSE,
BUT IT'S THE MOST BEAUTIFUL THING
I HAVE EVER LAID EYES ON.



Installation

Installation Time

There are many editors for \LaTeX and I don't think there is an editor that fits everyone. It's a matter of personal taste.

Installing \LaTeX

- Windows:
 - ▶ MiK \TeX
 - ▶ T \TeX nicCenter
 - ▶ T \TeX maker
- Mac:
 - ▶ Mac \TeX
 - ▶ T \TeX maker

Make sure you read the installation notes

Installation Time

If you are going to be writing papers with \LaTeX you should also install \BibTeX to help you do your reference list.

\BibTeX is a reference management software. Also free!

Installing \BibTeX

- \BibTeX
- \JabRef

Make sure you read the installation notes

Getting started

Getting started

- Writing a simple document script file
- Writing a simple presentation script file
- Compiling script

Document structure

No matter the type of document you are writing, all \LaTeX files have two elements

- Preamble
- Main Document

```
1 %%% Preamble
2
3 \begin{document}
4
5 %%% Main Document
6
7 \end{document}
```

Preamble

The purpose of the preamble is to tell \LaTeX :

- what kind of document you will set up.
- what packages you are going to need
- other definitions (i.e. colors, functions, commands, etc)

Note: A package is a set of additional functions such as 'listings' for programming language formatting.

```
1 %%% Preamble
2
3 % Document type = 'article'
4 \documentclass{article}
5
6 % Packages
7 \usepackage{hyperref} % Add links to your document
8 \usepackage{listings} % Code formatting and highlighting
9
10 % Path where graphics are located
11 \graphicspath{figures/}
12
13 \begin{document}
```


- In the main document is where you will put the text of the article or of the presentation.
- This part of the document will be different for articles and presentations.
- For articles, the main document basically consist of the text.
- For presentations, the main document consists of 'frames'. Each 'frame' is a slide-ish.

Document: Article

```
1 \documentclass{article}
2 %%% Preamble
3
4 \begin{document}
5 %%% Main document
6
7 This is my very first Latex file .
8
9 Hello World!
10 \end{document}
```

Document: Beamer

```
1 \documentclass{beamer}
2 %%% Preamble
3
4 \begin{document}
5 %%% Main document
6
7 \begin{frame}
8 This is my very first Latex file.
9 \end{frame}
10
11 \begin{frame}
12 Hello World!
13 \end{frame}
14 \end{document}
```

Adding content

Title page

Either for a presentation or an article you want to have a title page.

```
1 \documentclass{article}
2
3 %%% Title Components in preamble
4
5 \title{Welcome to Grad School {\LaTeX} Workshop}
6
7 \subtitle{Texas Tech Grad School Intro 2016}
8
9 \author{Iñaki Sagarzazu}
10
11 \institute{inaki.sagarzazu@ttu.edu \\\ Texas Tech University}
12
13 \date{\today}
14
15 \begin{document}
16
17 \titlepage
```

Structuring text

It is good practice to organize your document into sections and subsections and subsubsections

```
1 \section{Section 1}
2 \subsection{subsec 1.1}
3 \subsection{subsec 1.2}
4 \subsubsection{1.2.1}
5 \section{Section 2}
6 \subsection{subsec 2.1}
```

Adding figures (1)

You need to make sure you are loading the package for adding graphics.

```
1 %%%% Include in preamble these two lines
2 \usepackage{graphicx}
3 \graphicspath{{Figures/}}
```

Adding figures (2)

Adding a figure with caption

Figure: TTU



```
1 %%% With caption
2 \begin{figure}[ht]
3 \centering
4 \caption{TTU}
5 \includegraphics[width=.5\textwidth]{TTU}
6 \end{figure}
```


Adding figures

Adding just a figure without caption.



```
1 %%% Without caption  
2 \includegraphics[width=.5\textwidth]{TTU}
```

Adding tables

| column 1 | column 2 | column 3 |
|----------|----------|----------|
|----------|----------|----------|

| | | |
|-------|--|--|
| row 2 | | |
|-------|--|--|

| | | |
|--|-------|--|
| | row 3 | |
|--|-------|--|

```
1 \begin{tabular}{ccc}
2 column 1 & column 2 & column 3 \\ \hline
3 row 2 & & \\
4 & row 3 & \\
5 \end{tabular}
```

To make the table with a caption embed the tabular environment inside a table environment

```
1 \begin{table}
2 \begin{tabular}{ccc}
3 \end{tabular}
4 \end{table}
```

Adding lists

- 1 item 1
 - 2 item 2
- item 1
 - item 2

```
1 \begin{enumerate}
2 \item item 1
3 \item item 2
4 \end{enumerate}
5 \begin{itemize}
6 \item item 1
7 \item item 2
8 \end{itemize}
```

Note: You can also do nested lists.

Adding formulas

Just the formula ... $f(x) = \sum_i (x_i^2)$

An 'equation'

$$f(x) = \sum_i (x_i^2) \quad (1)$$

```
1 Just the formula ...
2 $f(x) = \sum_i (x_i^2)$
3 An 'equation'
4 \begin{equation}
5 f(x) = \sum_i (x_i^2)
6 \end{equation}
```

Huge Large normalsize footnotesize tiny

```
1 \Huge Huge
2 \Large Large
3 \normalsize normalsize
4 \footnotesize footnotesize
5 \tiny tiny
```

Text formatting - size

bold *italic* underline typewriter

```
1 \textbf{bold}
2 \textit{italic}
3 \underline{underline}
4 \texttt{typewriter}
```

Text formatting - others

purple text
structure

alert

```
1 \textcolor{purple}{purple text} \\ % New line command
2 \structure{structure} \\ \bigskip
3 \alert{alert}
```

Further Resources

Working with \LaTeX

- The best way to learn \LaTeX is through ‘plagiarising’ other people’s templates.
- There are plenty of resources online to guide you, if you are brave enough to go down this crazy path
- Find a template you like and edited to make it yours
- If you don’t practice it and use it you won’t learn it

Want to learn more?

- <https://en.wikibooks.org/wiki/LaTeX>
- <http://www.maths.tcd.ie/~dwilkins/LaTeXPrimer/>
- <https://www.latex-tutorial.com/tutorials/quick-start/>
- <http://www.andy-roberts.net/writing/latex>
- <https://www.tug.org/twg/mactex/tutorials/ltxprimer-1.0.pdf>

If you have any additional questions about latex, life, or the pursuit of happiness shoot me an email.