

Math 2794W An Interactive Introduction to L^AT_EX

Part 3: Not Just Papers: Presentations & More

Original slides written by Dr John D. Lees-Miller (modified with permission)

March 24, 2020



L^AT_EX Recap: Commands & Arguments

- ▶ A command starts with a *backslash* `\`.
- ▶ Some commands take an *argument* in curly braces `{ }`.
- ▶ Some commands also take *optional arguments* in square brackets `[]`.

```
\includegraphics[  
width=0.5\textwidth]{gerbil}
```

```
\includegraphics[  
width=0.3\textwidth,  
angle=270]{gerbil}
```



L^AT_EX Recap: Environments

- ▶ The `\begin` and `\end` commands are used to create many different environments — contexts.
- ▶ The `itemize` and `enumerate` environments make lists.

```
\begin{itemize} % for bullet points  
\item Biscuits  
\item Tea  
\end{itemize}
```

- ▶ Biscuits
- ▶ Tea

```
\begin{enumerate} % for numbers  
\item Biscuits  
\item Tea  
\end{enumerate}
```

1. Biscuits
2. Tea

L^AT_EX Recap: Mathematics

- ▶ The equation environment makes a numbered equation.

```
\begin{equation}
  \sum_{k=1}^n \frac{1}{2^k}
\end{equation}
```

$$\sum_{k=1}^n \frac{1}{2^k} \quad (1)$$

- ▶ Use dollar signs (\$) to mark mathematics in text.

% not so good:

Let a and b be distinct positive integers, and let $c = a - b + 1$.

% much better:

Let a and b be distinct positive integers, and let $c = a - b + 1$.

Let a and b be distinct positive integers, and let $c = a - b + 1$.

Let a and b be distinct positive integers, and let $c = a - b + 1$.

- ▶ Always use dollar signs in pairs — one to begin the mathematics, and one to end it.

In fact, we could have written \dots as `\begin{math}\dots\end{math}`.

L^AT_EX Recap: Document Structure

- ▶ Starts with the `\documentclass` — what type of document.
- ▶ Metadata (`\title` and `\author`) and packages in the preamble.
- ▶ Content between `\begin{document}` and `\end{document}`.
- ▶ The `\maketitle` command creates the title; `\section` commands create numbered sections.

```
\documentclass{article}
% preamble
\title{The Title}
\author{A. Author}

\begin{document}
% body
\maketitle

\section{Introduction}

In this paper we \ldots

\end{document}
```

The Title

A. Author

January 21, 2020

1 Introduction

...

L^AT_EX Recap: Optional Recap Exercise

1. Here is the text for a short article:¹

Click to open this exercise in **Overleaf**

2. Add L^AT_EX commands to the text to make it look like this one:

Click to open the model document

Hints

- ▶ Use the `enumerate` and `itemize` environments for lists.
- ▶ To typeset a `%` percent sign, *escape* it with a backslash (`\%`).
- ▶ To typeset the equation, use `\frac` for the fraction and the `\left(` and `\right)` commands for the parentheses.

¹Based on http://www.cgd.ucar.edu/cms/agu/scientific_talk.html

Presentations with beamer

- ▶ Beamer is a package for creating presentations (such as this one!) in \LaTeX .
- ▶ It provides the beamer document class.
- ▶ Use the frame environment to create slides.

```
\documentclass{beamer}

\title{Welcome to Beamer} % A good title
\author{Your Name}
\institute{Where You're From} % University of Connecticut
\date{Date of Presentation} % Write the due date

\begin{document}

\begin{frame}
\titlepage % beamer's \maketitle
\end{frame}

\begin{frame}{This is the title of a slide}
Here is a sentence.
\end{frame}

\end{document}
```

Welcome to Beamer

Your Name

Where You're From

Date of Presentation

Presentations with beamer: Following Along

- ▶ As we go through the following slides, try out the examples by typing them into the example document on **Overleaf**.

Click to open the example document in **Overleaf**

Presentations with beamer: Frames

- ▶ Use `\frametitle` to give the frame a title.
- ▶ Then add content to the frame.
- ▶ The source for this frame looks like:

```
\begin{frame}
  \frametitle{Presentations with beamer: Frames}
  \begin{itemize}
    \item Use \texttt{frametitle} to give the frame a title.
    \item Then add content to the frame.
    \item The source for this frame looks like ...
  \end{itemize}
\end{frame}
```

Presentations with beamer: Sections

- ▶ You can use `\sections` to group your frames, and beamer will use them to create an automatic outline.
- ▶ To generate an outline, use the `\tableofcontents` command. Here's one for this presentation. The `currentsection` option highlights the current section.

```
\tableofcontents[currentsection]
```

LaTeX Recap

Presentations with beamer

(For students comfortable with LaTeX) Drawings with TikZ and more advanced topics

Presentations with beamer: Multiple Columns

- ▶ Use the `columns` and `column` environments to break the slide into columns.
- ▶ The argument for each `column` determines its width.
- ▶ See also the `multicol` package, which automatically breaks your content into columns.

```
\begin{columns}
  \begin{column}{0.4\textwidth}
    \begin{itemize}
      \item Use the columns ...
      \item The argument ...
      \item See also the ...
    \end{itemize}
  \end{column}
  \begin{column}{0.6\textwidth}
    % second column
  \end{column}
\end{columns}
```

Presentations with beamer: Highlights

- ▶ Use `\emph` or `\alert` to highlight:

I should `\emph{emphasise}` that
this is an `\alert{important}` point.

I should *emphasise* that this
is an **important** point.

- ▶ Or specify bold face or italics:

Text in `\textbf{bold face}`.
Text in `\textit{italics}`.

Text in **bold face**. Text in
italics.

- ▶ Or specify a color (American spelling):

It `\textcolor{red}{stops}`
and `\textcolor{green}{starts}`.

It **stops** and **starts**.

- ▶ See <http://www.math.umbc.edu/~rouben/beamer/quickstart-Z-H-25.html> for more colors & custom colors.

Presentations with beamer: Figures

- ▶ Use `\includegraphics` from the `graphicx` package.
- ▶ The `figure` environment centers by default, in beamer.

```
\begin{figure}  
  \includegraphics[  
    width=0.5\textwidth]{gerbil}  
\end{figure}
```



Image license: CC0

Presentations with beamer: Tables

- ▶ Tables in \LaTeX take some getting used to.
- ▶ Use the `tabular` environment from the `tabularx` package.
- ▶ The argument specifies column alignment — left, right, right.

```
\begin{tabular}{lrr}  
Item & Qty & Unit \\\$ \\  
Widget & 1 & 199.99 \\  
Gadget & 2 & 399.99 \\  
Cable & 3 & 19.99 \\  
\end{tabular}
```

Item	Qty	Unit \$
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- ▶ It also specifies vertical lines; use `\hline` for horizontal lines.

```
\begin{tabular}{|l|r|r|} \hline  
Item & Qty & Unit \\\$ \\\hline  
Widget & 1 & 199.99 \\  
Gadget & 2 & 399.99 \\  
Cable & 3 & 19.99 \\\hline  
\end{tabular}
```

Item	Qty	Unit \$
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- ▶ Use an ampersand `&` to separate columns and a double backslash `\\` to start a new row.

Presentations with beamer: Blocks

- ▶ A block environment makes a titled box.

```
\begin{block}{Interesting Fact}  
This is important.  
\end{block}
```

Interesting Fact

This is important.

```
\begin{alertblock}{Cautionary Tale}  
This is really important!  
\end{alertblock}
```

Cautionary Tale

This is really important!

- ▶ How exactly they look depends on the theme. . .

Presentations with beamer: Themes

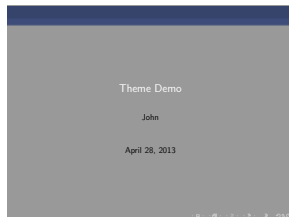
- ▶ Customise the look of your presentation using themes.
- ▶ See http://deic.uab.es/~iblanes/beamer_gallery/index_by_theme.html for a large collection of themes.

```
\documentclass{beamer}

% or Warsaw, Bergen, Madrid, ...
\usetheme{Darmstadt}

% or albatross, beaver, crane, ...
\usecolortheme{beetle}

\title{Theme Demo}
\author{John}
\begin{document}
\begin{frame}
\titlepage
\end{frame}
\end{document}
```



Presentations with beamer: Animation

- ▶ A frame can generate multiple slides.
- ▶ Use the `\pause` command to show only part of a slide.

```
\begin{itemize}
\item Can you feel the
\pause \item anticipation?
\end{itemize}
```

- ▶ Can you feel the

Presentations with beamer: Animation

- ▶ A frame can generate multiple slides.
- ▶ Use the `\pause` command to show only part of a slide.

```
\begin{itemize}
\item Can you feel the
\pause \item anticipation?
\end{itemize}
```

- ▶ Can you feel the
- ▶ anticipation?

- ▶ There many more clever ways of making animations in beamer; see also the `\only`, `\alt`, and `\uncover` commands.

Presentations with beamer: Exercise

Recreate Peter Norvig's excellent "Gettysburg Powerpoint Presentation" in beamer.²

1. Open this exercise in **Overleaf**:

Click to open this exercise in **Overleaf**

2. Download this image to your computer and upload it to **Overleaf** via the files menu.

Click to download image

3. Add \LaTeX commands to the text to make it look like this one:

Click to open the model document

²<http://norvig.com/Gettysburg>

(For students comfortable with \LaTeX) Drawings with TikZ and more advanced topics

- ▶ TikZ is a package for drawing figures in \LaTeX .
- ▶ It defines a powerful drawing language inside \LaTeX . Short programs can draw surprisingly complicated things.
- ▶ See slides and exercises here:
<https://egunawan.github.io/latex-course/en/part4.pdf>

Thanks, and happy T_EXing!