

# Pragmatic L<sup>A</sup>T<sub>E</sub>X

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# What is L<sup>A</sup>T<sub>E</sub>X?

- A typesetting and document preparation system
- Looks better than Word
- Written especially for writing technical reports

- Certain character combinations look awkward together, for example...

find vs. find

fly vs. fly

efficient vs. efficcient

- We go to Mines, we all need to typeset mathematical equations for projects, lab reports, etc.
- L<sup>A</sup>T<sub>E</sub>X supports these very nicely, and the output looks much better than the Word equivalent.
- We will discuss how to typeset mathematics later.

$$-\int_0^{2\pi} \frac{kQd\theta}{2\pi(a^2+x^2)^{3/2}} (a \sin \theta \hat{j}) = 0$$

$$-\int_0^{2\pi} \frac{kQ d\theta}{2\pi(a^2+x^2)^{3/2}} (a \sin \theta \hat{j}) = 0$$

# Structure of L<sup>A</sup>T<sub>E</sub>X Document

```
\documentclass[letterpaper]{article}

% Package includes here
\usepackage[margin=1in]{geometry}

% File metadata here
\title{Example}
\author{Nicholas Lantz}
\date{\today} % Outputs today's date

\begin{document}
\maketitle % Creates title based on metadata
% Document goes here....
\end{document}
```

- L<sup>A</sup>T<sub>E</sub>X considers all spaces between words equally, so adding extra spaces between words will not increase the spacing in the document.
- Two ways to create a new paragraph in L<sup>A</sup>T<sub>E</sub>X
  - 1 Two newlines (`\n`)
  - 2 `\\`

Generally, use the two newlines, looks better.

However, the two wacks can look better inside of the author declaration at the top of the document, or in tables (discussed later).

```
\section{Top-level Section}  
\subsection{Sub-section}  
\section{Yet Another Section}
```

There are other kinds of sections, like

- part
- chapter
- section
- subsection
- subsubsection
- paragraph
- subparagraph

# Document Classes

Writing L<sup>A</sup>T<sub>E</sub>X

- Remember the `\documentclass{article}`?
- “article” is the most common document class I use. Used for short documents
- “Report” has access to the “chapter” section discussed in the last slide
- “book” has access to the “part” section
- Generally, the document class will change the basic structure of your document and the style of headings, but it will not change much.
- Generally, use “article” for short documents and “report” for long ones.



# Common Packages

## Writing L<sup>A</sup>T<sub>E</sub>X

```
\usepackage[margin=1in]{geometry}
% Used to adjust margins
\usepackage{verbatim}
% adds "comment" environment for long comments
% Allows the displaying of text "verbatim" that the LaTeX 1
% will not process
\usepackage{amsmath}
% Allows expanded math features
\usepackage{times}
% Uses Times New Roman font for LAIS classes
\usepackage{setspace}
% Easy double spacing between lines in paragraphs
\usepackage{graphicx}
% Includes images (discussed later)
```

Any other *common* packages I missed?

For all of the below commands, just use the control word and then place the text you want to appear inside of the {}.

<b>Bold Face</b>	<code>\textbf{}</code>
<i>Italics</i>	<code>\textit{}</code>
<i>Emphasized</i>	<code>\emph{}</code>
Roman Text	<code>\rmfamily{}</code>
Sans Serif Text	<code>\textsf{}</code>
Monospace Text	<code>\texttt{}</code>