TAMUthesis User Guide v1.0

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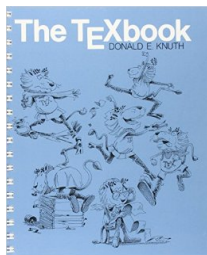
April 15, 2015

Overview

TeX $= \tau\epsilon\chi[\grave{}tek]$

- A typesetting system designed by Donald Knuth[1]
- Produce high-quality books with reasonable programming
- compatible with Windows/Linux/Mac and give the same PDF result
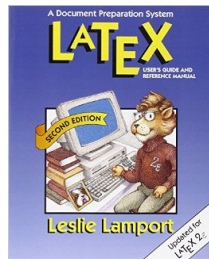- Advantage: Equation

$$\mathcal{A}(u) = \int_{\Omega} (1 + |\nabla u|^2)^{\frac{1}{2}} \mathrm{d}x_1 ... \mathrm{d}x_n \tag{1}$$

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[1]Stanford University

LᴬTEX= Lamport TEX[`latek] (or ['leitek])

- Simplify TEX by integrating macros.
- LᴬTEXis TEXin nature.
- It's most widely used TEX macro. Lots of international institute, conference, journal (IEEE) supports it.
- Many University have LᴬTEX thesis template.
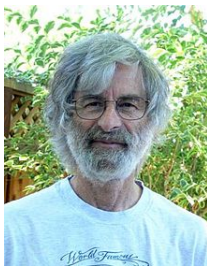
TAMUthesis = Texas A&M University Thesis Template

- The Thesis Office, Office of Graduate and Professional Study, TAMU leads the effort to develop this template.
- Provide an NON-MS WORD approach for students to format thesis.
- Benefit: Focus on thesis content instead of formating.

Figure: Cover

Figure: Table of Content

Advantage of Using LaTeX for thesis writing

Feature	Using MS WORD	Using LaTeX
Learning Curve	Straightforward	Read lshort[2] for 2 hours
Advance Feature	Not Easy to handle	Read lshort for 2 hours
Troubleshooting	Blog/MS website	Forum/senior user support

Table: MS WORD V.S. LaTeX

- Using MS WORD to write thesis needs you to adjust the format.
- LaTeX take care all the format problems.
- Most people are not familiar with advanced feature in WORD, these features are also not easy to use, e.g. Insert TOC in WORD.

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[2]The Not So Short Introduction to LaTeX, Or LaTeX in 157 minutes.

LATEX defines four standard template

- article
- book
- report
- letter

LaTeX defines four standard template

- article
- book
- report
- letter

Example LaTeX code

```
\documentclass[12pt]{book}  %document class/font size
\author{SuperMan}           %claim the author
\title{Battle with BatMan}  %claim the Title
\begin{document}            % Start Main Content
\maketitle                  %create the title page
    \chapter{Introduction}  %Chapter 1 Name
        \section{First Section Title}%Section 1.1 Name
            \subsection{First Subsection Title}
    \chapter{2nd Chapter Title}
\appendix                   %start appendix
    \chapter{Appendix Chapter Title}
\end{document}              %end of document
```

LATEX Command & Environment

Command
- \textbf{Bold Font} =>**Bold Font**
- {\large larger font is 14pt}
  => larger font is 14pt
- Command below changes the vertical space.
- \vspace{-1ex}

- \vspace{2ex}

LATEX Command & Environment

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Environment
```
\begin{equation*}
a^{2}-b^{2}=(a+b)(a-b)
\end{equation*}
```
$$a^2 - b^2 = (a + b)(a - b)$$

LaTeX Command & Environment List

Table: Common Command Summary

\chapter	\section	\subsection	\subsubsection
Chapter Title	Section Title	Subsection Title	Subsubsection Title
\textbf	\textit	\emph	\textsc
bold font	*italic font*	*emphasized*	SMALL CAPS
\raggedright	\raggedleft	\centering	\indent
left align	right align	center align	indentation
\footnote{}	\item	\caption{}	\includegraphics{}
footnote[3]	list item	fig/tab title	insert graphics
\label{}	\cite{}	\ref{}	\eqref{}
label for refer	reference cite[1]	Ref to 2	equation ref(2)

---

[3]footnote

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LaTeX Command & Environment List

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Chapter Title	Section Title	Subsection Title	Subsubsection Title
\textbf	\textit	\emph	\textsc
bold font	*italic font*	*emphasized*	SMALL CAPS
\raggedright	\raggedleft	\centering	\indent
left align	right align	center align	indentation
\footnote{}	\item	\caption{}	\includegraphics{}
footnote[3]	list item	fig/tab title	insert graphics
\label{}	\cite{}	\ref{}	\eqref{}
label for refer	reference cite[1]	Ref to 2	equation ref(2)

Table: Common Environment

table	figure	equation
itemize	enumerate	description

---

[3]footnote

LATEX Equation Demo

$$WAD(S_n) = \begin{cases} +1 & \text{if} & E(S_n) > \varepsilon_2 \\ -1 & \text{if} & E(S_n) < \varepsilon_1 \\ sign(zcr(S_n)) - \varepsilon_{zcr} & \text{if} & \varepsilon_1 \leq E(S_n) \geq \varepsilon_2 \end{cases} \qquad (2)$$

LATEX Equation Demo

$$
WAD(S_n) = \left\{ \begin{array}{ccc} +1 & if & E(S_n) > \varepsilon_2 \\ -1 & if & E(S_n) < \varepsilon_1 \\ sign(zcr(S_n)) - \varepsilon_{zcr} & if & \varepsilon_1 \le E(S_n) \ge \varepsilon_2 \end{array} \right. \tag{2}
$$

Example (Code for Equation above)

```
\begin{equation}
WAD(S_{n}) = \Bigg\{
\begin{array}{ccc}
+1 & if &  E(S_{n}) >  \varepsilon_{2}        \\
-1 & if &  E(S_{n}) < \varepsilon_{1}         \\
sign(zcr(S_n)) - \varepsilon_{zcr} & if &  %
\varepsilon_{1} \le E(S_{n}) \ge \varepsilon_{2}        \\
\end{array}
\end{equation}
```

LATEX Equation Demo 2

$$\begin{bmatrix} p_{11} & p_{12} & \dots & p_{1n} \\ p_{21} & p_{22} & \dots & p_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ p_{m1} & p_{m2} & \dots & p_{mn} \end{bmatrix}$$

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LaTeX Equation Demo 2

$$\begin{bmatrix} p_{11} & p_{12} & \ldots & p_{1n} \\ p_{21} & p_{22} & \ldots & p_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ p_{m1} & p_{m2} & \ldots & p_{mn} \end{bmatrix}$$

Example (Code for Equation left)

```
\begin{equation*}
\begin{bmatrix}
p_{11} & p_{12} & \ldots
& p_{1n} \\
p_{21} & p_{22} & \ldots
& p_{2n} \\
\vdots & \vdots & \ddots
& \vdots \\
p_{m1} & p_{m2} & \ldots
& p_{mn}
\end{bmatrix}
\end{equation*}
```

LATEX Table Demo

Table: Table Demo

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

LATEX Table Demo

Table: Table Demo

Treatments	**Response 1**	**Response 2**
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Example (Code for Table above)

```
\begin{table}
\caption{Table Demo}
\begin{tabular}{| c | c | c|}
\hline
\textbf{Treat} & \textbf{Resp 1} & \textbf{Resp 2}\\ \hline
Treatment 1 & 0.0003262 & 0.562 \\ \hline
Treatment 2 & 0.0015681 & 0.910 \\ \hline
Treatment 3 & 0.0009271 & 0.296 \\ \hline
\end{tabular}
\end{table}
```

Theorem & Verbatim
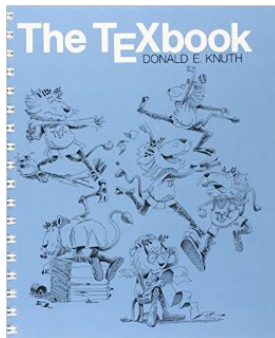
Theorem (Mass–energy equivalence)

$E = mc^2$

Example (Theorem in Verbatim code)

```
\begin{theorem}[Mass--energy equivalence]
$E = mc^2$
\end{theorem}
```

Figure

Example (Figure LATEX Code)

`\includegraphics{pic/YourPiCName.bmp}`

Citation & Reference

Start to learn LaTeX by read the book[1].

Example (Citation)

```
Start to learn \LaTeX~by read the book\cite{Tobi2014}.
```

Citation & Reference

Start to learn LaTeX by read the book[1].

Example (Citation)

```
Start to learn \LaTeX~by read the book\cite{Tobi2014}.
```

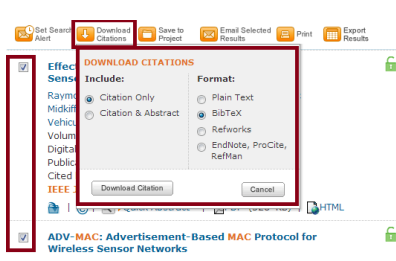**JabRef** supports Windows/Linux/Mac for Reference Management.

Figure: IEEE bibtex citation download
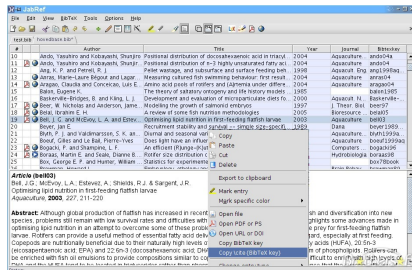

Figure: copy citation from JabRef and paste into LaTeX

References

Tobias Oetiker (2014)

The Not So Short Introduction to LATEX2ε

or LATEX2ε in 157 minutes Version 5.04, Oct 29, 2014.

TAMUthesis LATEX Main Body

Example (TAMUthesis LATEX Main Body 1)

```
\documentclass[SectionMethod, ListStyleI]{TAMUthesis}
%TAMUthesis is the customized document class.
%\documentclass[ChapterMethod, ListStyleII]{TAMUthesis}
\begin{document}
%use include command to include another tex file.
\include{data/cover} %include file cover.tex
\maketitle    %creates title page
\frontmatter %front page style, roman page number etc.
\include{data/Abstract}
\include{data/Dedication}
\include{data/Acknowledgment}
\include{data/Nomenclature}
```

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TAMUthesis LATEX Main Body

Continued from Previous Page.

Example (TAMUthesis LATEX Main Body 2)

```
\TAMUTableofContentsFormat      %TOC format control command
        \TAMUTocAddWordPage %Toc=Table of Content
        \tableofcontents    %Generate Table of Content here
\TAMUListOfFiguresFormat
        \TAMULofAddWordPage
         \listoffigures
\TAMUListOfTablesFormat
        \listoftables
```

Continue on next page.

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TAMUthesis LATEX Main Body

Continued from Previous Page.

Example (TAMUthesis LATEX Main Body 3)

```
\mainmatter %Thesis Main Content Format control command
    \include{data/chapterI}
    \include{data/chapterII}
    \include{data/chapterIII}
    \include{data/chapterIV}
%    \include{data/myNewChapterName.tex}
%include reference file, managed by JabRef
\TAMUReferenceFormat          %Reference layout control
    \bibliographystyle{ieeetr} %Reference use IEEE format
    \bibliography{data/myReference}
```

Continue on next page.

TAMUthesis LATEX Main Body

Continued from Previous Page.

Example (TAMUthesis LATEX Main Body 4)

```
\appendix
\TAMUAppendixFormat %TAMUthesis Appendix Layout Control
%comment the line below if claiming ChapterMethod
\begin{appendices}
        \include{data/Appendix} %include file Appendix.tex
%comment the line below if claiming ChapterMethod
\end{appendices}
\end{document} %END OF TAMUthesis
```

End of TAMUthesis LATEX Main Body

TAMUthesis_LATEX_Template_Ver2.2 Folder Structure

Recommend to use **MikTeX**, apply the command XeLaTeX to compile.The TAMUthesis LATEX Package contains the below key files.

- TAMUthesis.cls   %The document class definition file.
- TAMUthesis_Template_Ver2p2.tex %Main file, top level structure.
- data[folder]

    Abstract.tex
    ChapterI.tex
    · · ·

- tabe[folder]

    table1.tex
    table2.tex

- graphic[folder]

    pic1.jpg
    graphic2.png

- kanjix.map %empty file, for a warning fix in LATEX.

The End