THE INTRODUCTION AND USAGE OF LaTeX THESIS TEMPLATE FOR TEXAS A&M UNIVERSITY

A Thesis

by

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MASTER OF SCIENCE

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ABSTRACT

This is the first numbered page, lower case Roman numberal (ii). Page numbers are outside the prescribed margins, at the bottom of the page and centered; everything else is inside the margins.No bold on this page (Exception: heading ABSTRACT is bold if major headings are bold. *This LaTeX template applies to this exception*).

Text begins two double spaces below the major heading. Recommended length of text is no more than 350 words. Vertical spacing is double spaced or space-and-a-half. (*This LaTeX template applies double space for this ABSTRACT.*) The same margin settings and text alignment are followed else where in this thesis. There should be no numbered references or formal citations in ABSTRACT.

The content of this ABSTRACT provides a complete, succinct snapshot of the research, addressing the purpose, methods, results, and conclusions of the research. As a result, it should stand alone without any formal citations or references to chapters/sections of the work. To accomodate with a variety of online database, images or complex equations should also be avoided.

The next three pages, which are Dedication, Acknowledgements and Nomenclature, are optional.

To my mother, To my father, To my grandfather, To my grandmother. I make it long to see the effect of two lines in this dedication page.

ACKNOWLEDGMENTS

This section is also optional, limited to four pages. It must follow the Dedication Page (or Abstract, if no Dedication). If listing preliminary pages in Table of Contents, include Acknowledgments. Heading (ACKNOWLEDGMENTS) is bold if major headings are bold. It should be in same type size and style as text. So does vertical spacing, paragraph style, and margins.

I would like to thank Texas A&M University Office of Graduate and Professional Study to give me this chance to organize the Thesis LaTeX template. Special Thanks to JaeCee Crawford, Amy Motquin and Christine Brown for carefully reviewing this material.

NOMENCLATURE

OGAPS	Office and Graduate and Professional Studies at Texas A&M University
B/CS	Bryan and College Station
TAMU	Texas A&M University

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LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION AND LITERATURE REVIEW

1.1 Author's Message

Howdy! This is my honor to organize the LATEX Thesis Template for Texas A&M University [1] as a graduate student at ECE under the guidance of OGAPS@TAMU. I have applied LaTeX to write my bachelor and master thesis in English previously. My approach is to deal with all the questions/settings with high level package or global settings. Please send me an email at shray_sharan@exchange.tamu.edu if you have any questions about the thesis template.

1.1.1 Brief Usage of the Template

some text here

Software to Install

MikTeX or **ProTeXt** is the free software recommended for Windows PC users to compile your LaTeX document. To compile for this document, XeLaTeX compiling engine is used. Another software called **JabRef** is also recommended for bibliography/reference management, its usage is similar with EndNote under Office Word.

Procedure to Compile LATEX Document

some text here

[1] This is a test to see how the footnote is displayed in long text below the main content. The font size is 10pt if you don't modify the default setting. As you can see, it is single space.

1.1.2 How to Fill this Document

The document structure is organized in the main .tex file, TAMUthesis_Template.tex, which has the same name as the output PDF file. Content in each chapter is under the folder of data. You can open the .tex files under the data folder to modify. Four chapters are added initially. To add in more chapters into the LATEX document, please open the TAMUthesis_Template.tex files and goto line No. 280 as shown in Figure 1.1. For the rest of the document, you can just delete the content in the data folder and fill your documents and then compile under TAMUthesis_Template.tex.)

1.1.3 Reference Usage and Example

This subsection test the usage of Reference. Paper McLoughlin (2014) is referred in this way. Actually,the option is available for you to change the default way how reference appears. The default and most commonly used option Einstein (1905) is displayed here.

```
273 \newpage
274 \pagenumbering{arabic}
275
276 \begin{spacing}{2}
277         \include{data/chapterI}
278         \include{data/chapterII}
279         \include{data/chapterIII}
280         \include{data/chapterIV}
281 %       \include{data/myNewChapterName.tex}
282
```

Figure 1.1: Add More Chapters into TAMUthesis_Template.tex. For example, a new Chapter named ”myNewChapterName.tex” is Created under the folder of data.

Unrelated citations are referred here for test of Reference Section onlyAndraka

(1998). If you find the Reference Barrera et al. (2013) has more items than you need Beritelli et al. (2002).

1.1.4 Equation Usage

some text here

1.1.5 Cover Page

Some text here

1.2 Specification in this TAMU Thesis LaTeX Template

1.2.1 Chapter Method Requirements

some text here

1.2.2 Subheadings Requirements

some text here

1.2.3 Third-Order Subheadings

some text here

1.3 Test Section

Test Content is displayed below.

1.4 Thesis Organization

Example code below for LaTeX description environment.

The 1st chapter introduces the background.

The 2nd chapter briefly describes how to do it.

The 3rd chapter details the design of the hardware. Test and verification of this hardware is located in Appendix A.

The 4th Chapter issues the discussions and gives the summary.

The Appendix contains some less-intersting, but still significant test benches, test setup details and test result information. It is provided in Appendix B. Appendix B.3 details the usage.

2 PAGES WITH A FIGURE, A TABLE AND AN EQUATION

2.1 Figure Placement and Size

This is a figure template

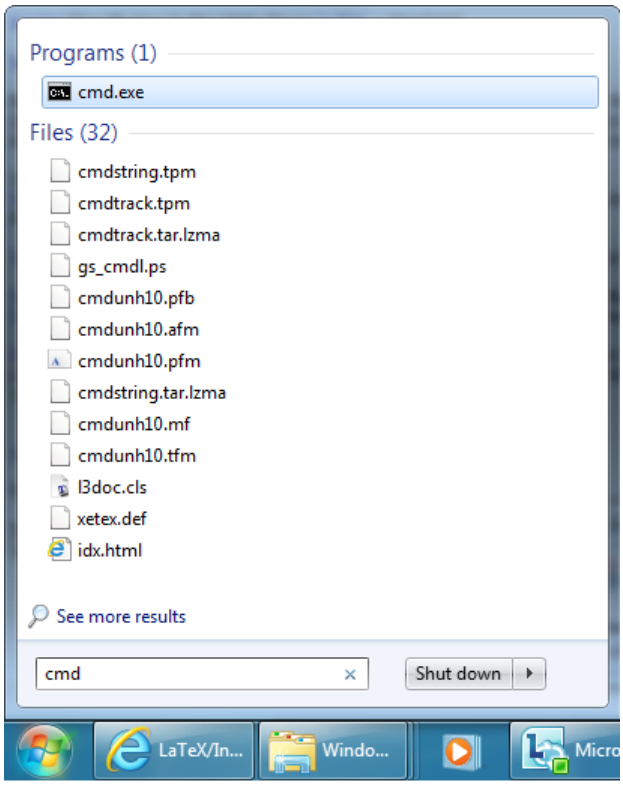

Figure 2.1: Open CMD (Command Line Interface) under Windows [Open the data/chapterI.tex file to search for the implementation of this figure, as you can see that, to precisely contorl the position of the figure is not as straightforward as that in Office Word.]

2.2 Figure Titles

Some text here

2.3 Continued Figures

It's not recommended to use continued figures in this LaTeX document since figure/table numbering increases automatically. But if you would like to use it, refer to Figure 2.2 for how Continued Figure works.

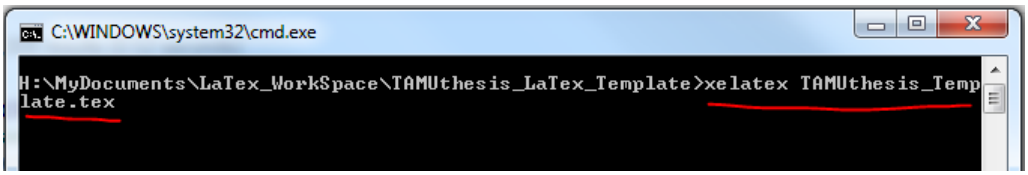

Figure 2.2: Compile .tex File

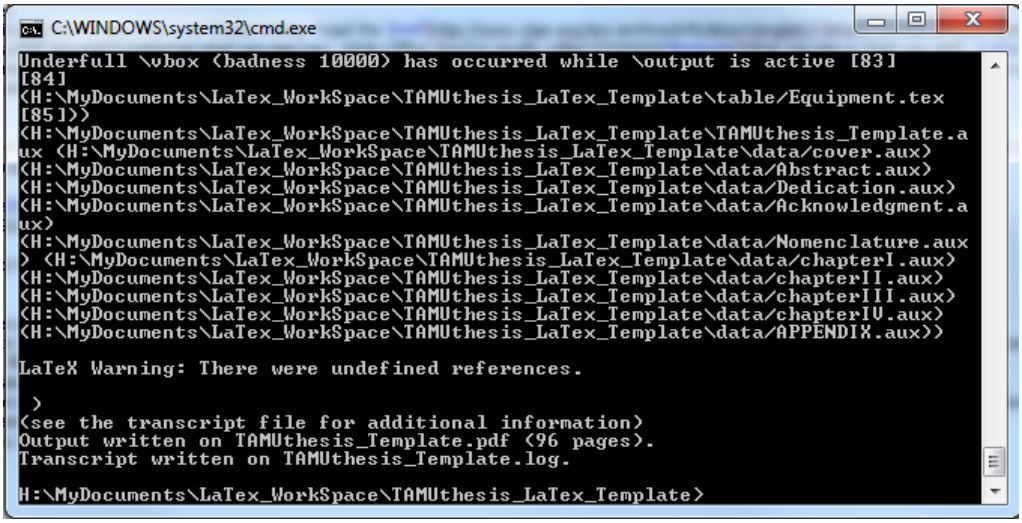

Figure 2.2 continued : [Example usage for Figure continued. Please don't display text for continued figures. This is just an example.]

2.4 Table Placement, Size and Table Title

Table 2.1: Results from Experimental and Control Runs

Species	Experiment 1	Experiment 2	Control 1	Control 2
Cow	+	-	-	+
Brown Horse	-	+	-	-
Gray Cow				
White House	-	+	+	-
Tan Cow	+	-	-	+

Table 2.1 continued

Species	Experiment 1	Experiment 2	Control 1	Control 2
White Cow	+	-	-	+
Spotted Pig	+	+	+	-
White Pig	+	-	-	-
Brown Pig		+	+	-
Gray Pig	+	-	-	+
Black Pig	+	-	-	+

2.5 Equations

The following format is recommended to be used to display equations. The equation can be referred as Equ. 2.1 and Equ. 2.2.

$$y' = y \cdot \cos(a) + x \cdot \sin(a) \tag{2.1}$$

$$e^{ja} = x \cdot \cos(a) - y \cdot \sin(a) \tag{2.2}$$

Some sample equations are below

$$V' = e^{(ja)} \times V \tag{2.3}$$

$$= [\cos(a) + j \times \sin(a)] \times (x + j \times y) \tag{2.4}$$

$$= x \cdot \cos(a) - y \cdot \sin(a) + j \cdot [x \cdot \sin(a) + y \cdot \cos(a)] \tag{2.5}$$

$$V = \begin{bmatrix} x' \\ y' \end{bmatrix} = \begin{bmatrix} x \cdot \cos(a) - y \cdot \sin(a) \\ y \cdot \cos(a) + x \cdot \sin(a) \end{bmatrix} \tag{2.6}$$

Equ.2.6 could be re-arranged as 2.7 and 2.8.

$$x' = \cos(a) \cdot [x - y \cdot \tan(a)] \tag{2.7}$$

$$y' = \cos(a) \cdot [y + x \cdot \tan(a)] \tag{2.8}$$

$$x_{i+1} = \cos(a_i) \cdot [x_i - y_i \cdot 2^{-i} \cdot d_i] \tag{2.9}$$

$$y_{i+1} = \cos(a_i) \cdot [y_i + x_i \cdot 2^{-i} \cdot d_i] \tag{2.10}$$

$$\cos(\alpha) = \frac{1}{\sqrt[2]{1 + \tan(\alpha)^2}} \tag{2.11}$$

$$K_i = \cos(\arctan(2^{-i})) = \frac{1}{\sqrt[2]{1 + \tan(\arctan(2^{-i}))}} = \frac{1}{\sqrt[2]{1 + 2^{-2i}}} \tag{2.12}$$

The product of K_i represents the so-called K factor (Equ. 2.13)

$$K = \prod K_i = \prod_{i=0}^{n-1} \frac{1}{\sqrt{1 + 2^{-2i}}} \tag{2.13}$$

2.6 Equation Vertical Spacing

Test section for TOC display

2.7 Other Information in this Document

Test section for TOC display

2.8 Another Test Section

Test section for TOC display

2.9 Another Test Section 3

The section title is to test the toc only, no other purpose.

2.10 Another Test Section 4

Test section for TOC display

2.11 Another Test Section 5 & 6

Test section for TOC display

3 VERY VERY VERY VERY VERY LONG TITLE I TEST THE DISPLAY IN THE HEADER

Refer to Appendix A.

3.1 Section Test Example 1

Test section for TOC display

3.2 Test Section in this Chapter

Section Title is to test toc display only, no actual meaning.

3.2.1 Test Subsection in this Chapter

Test subsection for TOC display

3.2.2 Subsection Test Example 1

Test subsection for TOC display

3.3 Section Test Example 2

Test section for TOC display

3.3.1 Test Subsection in this Chapter

Test subsection for TOC display

3.3.2 Subsection Test Example 3

Test subsection for TOC display

Example of multiple line **verbatim** environment.

```
  123
x 456
=============
  738 (this is 123 x 6)
 615  (this is 123 x 5, shifted one position to the left)
+492  (this is 123 x 4, shifted one position to the left)
=============
56088
```

Subsubsection Test Example 2

some text here(the text will not be displayed in the TOC)

3.3.3 Subsection Test Example 4

Test subsection for TOC display

3.3.4 Section Summary

A simple paragraph of Verilog code is below in verbatim

```
Always@(posedge LRCK)
   Begin
```

```
Counter = Counter + 1

If (Counter == 40)

Begin

Counter = 0

Phase_control_word = Phase_Control_word + 1

If (phase_control_word >= 7168)

Begin

Phase_control_word =4778

end

end

end
```

3.4 Section Test Example 3

Test section for toc display only

3.4.1 Subsection Test 1

Test subsection for toc display only.

3.4.2 Subsection Test 2

Test subsection for toc display only.

3.4.3 Subsection Test 3

Test subsection for toc display only.

3.4.4 Subsection Test 4

Test subsection for toc display only.

3.5 Section Test Example 4

Test section for toc display only

4 SUMMARY AND CONCLUSIONS

Some text/figure here

4.1 Section Test Unknown Part

Section here is to test toc display only.

4.2 Section Test Unknown Part 1

Section here is to test toc display only.

4.3 Section Test Unknown Part 2

Section here is to test toc display only.

4.4 Section Test Unknown Part 3

Section here is to test toc display only.

4.5 Section Test Unknown Part 5

Section here is to test toc display only.

4.6 Section Test Unknown Part 6

Section here is to test toc display only.

REFERENCES

Andraka, R., 1998: A survey of cordic algorithms for fpga based computers. 191–200, doi:10.1145/275107.275139, URL http://doi.acm.org/10.1145/275107.275139.

Barrera, T., A. Hast, and E. Bengtsson, 2013: An algorithm for parallel calculation of trigonometric functions. 8:1–8:4, doi:10.1145/2482767.2482778, URL http://doi.acm.org/10.1145/2482767.2482778.

Beritelli, F., S. Casale, G. Ruggeri, and S. Serrano, 2002: Performance evaluation and comparison of g. 729/amr/fuzzy voice activity detectors. *IEEE Signal Processing Letters*, **9 (3)**, 85–88.

Einstein, A., 1905: Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]. *Annalen der Physik*, **322 (10)**, 891–921, doi:http://dx.doi.org/10.1002/andp.19053221004.

McLoughlin, I. V., 2014: Super-audible voice activity detection. *IEEE/ACM Trans. Audio, Speech and Lang. Proc.*, **22 (9)**, 1424–1433, doi:10.1109/TASLP.2014.2335055, URL http://dx.doi.org/10.1109/TASLP.2014.2335055.

APPENDIX A

MISCELLANEOUS

A.1 Figures/Tables in Appendix

A.1.1 TEST1

Test subsection for toc display purpose only.

A.1.2 TEST2

```
  Begin


      If ( shift == 1'b1)
         Begin


         sr[(N-1):1] <= sr[(N-2):0];
sr[0] <= sr_in;
end
else
begin
sr[(N-1):1] <= sr[(N-2):0];
sr[0] <= sr[(N-1)];
end
```

```
end
```

A.2 Random Pictures and Test

Section here is to test toc display purpose only.

A.3 Misc Test

Section here is to test toc display purpose only.

APPENDIX B

SOURCE CODE

Some text here

B.1 Misc Test 2

Section here is to test toc display purpose only.

B.2 Misc Test 3

Section here is to test toc display purpose only.

B.3 Resource Usage

Design Summary (This page shows how to use landscape format in Appendix.)

Design Summary:

Number of errors: 0

Number of warnings: 0

Logic Utilization:

Number of Slice Flip Flops: 3,899 out of 33,280 11%

Number of 4 input LUTs: 3,717 out of 33,280 11%

Logic Distribution:

Number of occupied Slices: 2,198 out of 16,640 13%

Number of Slices containing only related logic: 2,198 out of 2,198 100%

Number of Slices containing unrelated logic: 0 out of 2,198 0%

*See NOTES below for an explanation of the effects of unrelated logic.

Total Number of 4 input LUTs: 3,890 out of 33,280 11%

Table B.1: Summary of Equipment Used

NAME	NO.	COMMENT
Tektronix TDS7704B Scope	1	7GHz, 20GSa/s time-equivallent sampling oscilloscope
Tektronix P7240 Probe	2	4GHz Single Ended Active Probe(High Impedance)
Agilent 81130A Function Generator	1	2 CHs Signal Generator
Xilinx Spartan-3A DSP 1800A Demo Board	1	`http://goo.gl/Svvpy`

[By University Requirement, no text should be allowed here in this landscape table/picture page. **DON'T USE sidewaystable from rotating package, it cannot align landscape title to the left binding side.]**