

EXAMPLE OF A THESIS  
FORMATTED WITH L<sup>A</sup>T<sub>E</sub>X  
USING THE UNIVERSITY OF GEORGIA  
STYLE MACRO PACKAGE, VERSION 2.0

by

MICHAEL A. COVINGTON

(Under the direction of Abraham Baldwin)

ABSTRACT

This is the abstract, a brief summary of the contents of the thesis. It is limited to 150 words in length for a master's thesis or 350 words for a doctoral dissertation.

The abstract page(s) are not numbered and are not necessarily included in the bound copies. Likewise, the signature page is not counted in page numbering because not all copies contain it.

INDEX WORDS: word processing, computer typesetting, computer graphics, style sheets, typography, dissertations, theses (academic)

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The acknowledgment is the place to thank the faculty, staff, family, and friends who have assisted you in preparing your thesis or dissertation. You may also acknowledge any financial support or special research materials given you. Copyright permissions may also be acknowledged here by stating that: (1) permission has been granted for reproduction of tables, tests, and other copyright protected items and (2) gives the source of the permission. Use a Preface rather than Acknowledgments when the research is discussed, for example, "the motivation for the study, the background of the project, the scope of the research, and the purpose of the paper" (Turabian, 1996, p. 7-8).

## PREFACE

This is the preface and it is created using a TeX field in a paragraph by itself. When the document is loaded, this appears in the edit window like a normal chapter, but it is actually an unnumbered chapter. The TeX field at the beginning of this paragraph sets the correct page heading for the Preface portion of the document. The preface does not appear in the table of contents..

## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS . . . . .	ii
PREFACE . . . . .	iii
CHAPTER	
1 INTRODUCTION . . . . .	1
2 SAMPLE MATHEMATICS AND TEXT . . . . .	3
2.1 IN-LINE AND DISPLAYED MATHEMATICS . . . . .	3
2.2 MATHEMATICS IN SECTION HEADS $\int_{\alpha}^{\beta} \ln t dt$ . . . . .	4
2.3 THEOREMS, LEMMATA, AND OTHER THEOREM-LIKE ENVI- RONMENTS . . . . .	4
3 FEATURES OF THE SHELL . . . . .	6
3.1 SECTION HEADINGS . . . . .	6
3.2 TAGS . . . . .	6
3.3 LIST ENVIRONMENTS . . . . .	7
BIBLIOGRAPHY . . . . .	9
APPENDIX . . . . .	10

## CHAPTER 1

### INTRODUCTION

This document is an example of how to format a thesis or dissertation using LaTeX and get results acceptable at The University of Georgia.

LaTeX (with its parent TeX) has two major advantages for academic use. First, to a remarkable degree it makes design decisions automatically. The author supplies only the words of a text, and LaTeX places them on the page in an aesthetic manner, avoiding rivers and awkward breaks. In this respect LaTeX is like a very intelligent typist or typesetter.

Second, LaTeX can typeset complex mathematical formulas such as

$$\sum_{i=1}^{\infty} x^{y+z} = \frac{p+q+r}{s+t+u+v}$$

both displayed (as shown above) and in the text, as in  $\sum_{i=1}^{\infty} x^{y+z} = \frac{p+q+r}{s+t+u+v}$ . This makes TeX and LaTeX indispensable for mathematicians, physicists, and the like.

LaTeX also has built-in formats for other kinds of displayed material such as verse,

Freude, schöne Götterfunken  
Tochter aus Elysium,  
Wir betreten, feuertrunken,  
Himmlische, dein Heiligtum!

and direct quotations:

The society that scorns excellence in plumbing, because plumbing is a humble activity, and tolerates shoddiness in philosophy, because philosophy is an exalted activity, will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water.

— John Gardner, *Excellence*

If you wish, quotes and other displayed material can be single-spaced; here is an example of how that is achieved:

Yes, I wrote “The Purple Cow.”  
 I’m sorry now I wrote it.  
 But I can tell you anyhow  
 I’ll kill you if you quote it!

— Anonymous?

Well, maybe it’s not as anonymous as it looks. There you have it.<sup>1</sup> Whenever you quote parts of a computer program in English text, they should be set off by using typewriter type.

---

<sup>1</sup>This is a footnote. Notice that footnotes are single-spaced even though the text is double-spaced.

## CHAPTER 2

### SAMPLE MATHEMATICS AND TEXT

#### 2.1 IN-LINE AND DISPLAYED MATHEMATICS

The expression  $\sum_{i=1}^{\infty} a_i$  is in-line mathematics, while the numbered equation

$$\sum_{i=1}^{\infty} a_i \tag{2.1}$$

is displayed and automatically numbered as equation 2.1.

Let  $H$  be a Hilbert space,  $C$  be a closed bounded convex subset of  $H$ ,  $T$  a nonexpansive self map of  $C$ . Suppose that as  $n \rightarrow \infty$ ,  $a_{n,k} \rightarrow 0$  for each  $k$ , and  $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^+ \rightarrow 0$ . Then for each  $x$  in  $C$ ,  $A_n x = \sum_{k=0}^{\infty} a_{n,k} T^k x$  converges weakly to a fixed point of  $T$  [?].

Two sets of  $\text{\LaTeX}$  parameters govern mathematical displays.<sup>1</sup> The spacing above and below a display depends on whether the lines above or below are short or long, as shown in the following examples.

A short line above:

$$x^2 + y^2 = z^2$$

and a short line below.

A long line above may depend on your margins

$$\sin^2 \theta + \cos^2 \theta = 1$$

as will a long line below. This line is long enough to illustrate the spacing for mathematical displays, regardless of the margins.

---

<sup>1</sup> $\text{\LaTeX}$  automatically selects the spacing depending on the surrounding line lengths.

## 2.2 MATHEMATICS IN SECTION HEADS $\int_{\alpha}^{\beta} \ln t dt$

Mathematics can appear in section heads. Note that mathematics in section heads may cause difficulties in typesetting styles with running headers or table of contents entries.

## 2.3 THEOREMS, LEMMATA, AND OTHER THEOREM-LIKE ENVIRONMENTS

A number of theorem-like environments is available. The following lemma is a well-known fact on differentiation of asymptotic expansions of analytic functions.

**Lemma 1** *Let  $f(z)$  be an analytic function in  $\mathbb{C}_+$ . If  $f(z)$  admits the representation*

$$f(z) = a_0 + \frac{a_1}{z} + o\left(\frac{1}{z}\right),$$

for  $z \rightarrow \infty$  inside a cone  $\Gamma_{\varepsilon} = \{z \in \mathbb{C}_+ : 0 < \varepsilon \leq \arg z \leq \pi - \varepsilon\}$  then

$$a_1 = -\lim_{z \rightarrow \infty, z \in \Gamma_{\varepsilon}} z^2 f'(z), \quad (2.2)$$

**Proof.** Change  $z$  for  $1/z$ . Then  $\Gamma_{\varepsilon} \rightarrow \bar{\Gamma}_{\varepsilon} = \{z \in \mathbb{C}_- : \bar{z} \in \Gamma_{\varepsilon}\}$  and

$$f(1/z) = a_0 + a_1 z + o(z). \quad (2.3)$$

Fix  $z \in \bar{\Gamma}_{\varepsilon}$ , and let  $C_r(z) = \{\lambda \in \mathbb{C}_- : |\lambda - z| = r\}$  be a circle with radius  $r = |z| \sin \varepsilon / 2$ . It follows from (2.3) that

$$\frac{1}{2\pi i} \int_{C_r(z)} \frac{f(\lambda) d\lambda}{(\lambda - z)^2} = \sum_{m=0}^1 a_m \frac{1}{2\pi i} \int_{C_r(z)} \frac{(\lambda - z_0)^m d\lambda}{(\lambda - z)^2} + R(z), \quad (2.4)$$

where for the remainder  $R(z)$  we have

$$\begin{aligned} |R(z)| &\leq r^{-1} \max_{\lambda \in C_r(z)} o(|z|) = r^{-1} \max_{\lambda \in C_r(z)} |\lambda| \cdot O(|z| + r) \\ &= \frac{|z| + r}{r} \cdot O(|z| + r) = \frac{1 + \sin \varepsilon}{\sin \varepsilon} \cdot O(|z|). \end{aligned}$$

Therefore  $R(z) \rightarrow 0$  as  $z \rightarrow \infty$ ,  $z \in \bar{\Gamma}_{\varepsilon/2}$ , and hence by the Cauchy theorem (2.4) implies

$$\frac{d}{dz}f(1/z) = a_1 + R(z) \rightarrow a_1, \text{ as } z \rightarrow \infty, z \in \bar{\Gamma}_{\varepsilon/2},$$

that implies (2.2) by substituting  $1/z$  back for  $z$ . ■

## CHAPTER 3

### FEATURES OF THE SHELL

#### 3.1 SECTION HEADINGS

Use the Section tag for major sections, and the Subsection tag for subsections.

##### 3.1.1 SUBSECTION

This is some harmless text under a subsection.

##### SUBSUBSECTION

This is some harmless text under a subsubsection.

Subsubsubsection This is some harmless text under a subsubsubsection.

Subsubsubsubsection This is some harmless text under a subsubsubsubsection.

#### 3.2 TAGS

You can apply the logical markup tag *Emphasized*.

You can apply the visual markup tags **Bold**, *Italics*, Roman, Sans Serif, *Slanted*, SMALL CAPS, and Typewriter.

You can apply the special, mathematics only, tags BLACKBOARD BOLD, *CALLIGRAPHIC*, and *fraktur*. Note that blackboard bold and calligraphic are correct only when applied to uppercase letters A through Z.

You can apply the size tags `tiny`, `scriptsize`, `footnotesize`, `small`, `normalsize`, `large`, `Large`, `LARGE`, `huge` and `Huge`.

This is a Body Math paragraph. Each time you press the Enter key, Scientific WorkPlace switches to mathematics mode. This is convenient for carrying out “scratchpad” computations.

### 3.3 LIST ENVIRONMENTS

You can create numbered, bulleted, and description lists using the tag popup at the bottom left of the screen.

1. List item 1

2. List item 2

(a) A list item under a list item.

The typeset style for this level is different than the screen style. The screen shows a lower case alphabetic character followed by a period while the typeset style uses a lower case alphabetic character surrounded by parentheses.

(b) Just another list item under a list item.

i. Third level list item under a list item.

A. Fourth and final level of list items allowed.

• Bullet item 1

• Bullet item 2

– Second level bullet item.

\* Third level bullet item.

- Fourth (and final) level bullet item.

**Description List** Each description list item has a term followed by the description of that term. Double click the term box to enter the term, or to change it.

**Bunyip** Mythical beast of Australian Aboriginal legends.

## BIBLIOGRAPHY

LaTeX has powerful bibliography-generating tools built in, and you're welcome to use them. If you don't, you should use the "reflist" environment (a U.Ga. specialty) instead, and type your reference list, like this:

Abrahams, P. W.; Berry, K.; and Hargreaves, K. A. (1990) *TeX for the Impatient*.  
Reading, Mass.: Addison-Wesley.

Knuth, D. E. (1984) *The TeXbook*. Reading, Mass.: Addison-Wesley.

Lamport, L. (1986) *LaTeX: A Document Preparation System*. Reading, Mass.:  
Addison-Wesley.

## APPENDIX

### SOME MORE THINGS

This is where an appendix could go. To include a single appendix simply place the command “`\appendix`” and then use the “`\chapter*`” command to begin and name your appendix.

If you have more than one appendix, use the command “`\appendices`” and the regular “`\chapter`” command to begin and name each appendix.