EXAMPLE OF A THESIS

FORMATTED WITH LaTeX

USING THE UNIVERSITY OF GEORGIA

STYLE MACRO PACKAGE, VERSION 3.5

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.

Throughout this sample thesis, **please note that the layout obtained with LaTeX is not meant to be a perfect duplicate of the Microsoft Word examples in the *Graduate School Style Manual.*** LaTeX has additional typographic tools at its disposal, such as SMALL CAPITALS and various subtle adjustments of spacing, which are used by the LaTeX UGa style sheet in accordance with the standard practices of the book-printing industry.

The index words at the bottom of the abstract should be chosen carefully, preferably with the help of one or two of your colleagues. They are the words by which people will find your thesis when searching the scientific literature. If you want to get credit for your ideas,

be sure to choose a good set of index words so that people doing related work will know about yours.

INDEX WORDS: Word processing, Computer typesetting, Computer graphics,
Style sheets, Typography, Dissertations, Theses (academic)

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MICHAEL A. COVINGTON

B.A., The University of Georgia, 1977

M.Phil., Cambridge University, 1978

A Thesis Submitted to the Graduate Faculty

of The University of Georgia in Partial Fulfillment

of the

Requirements for the Degree

MASTER OF SCIENCE

ATHENS, GEORGIA

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Example of a Thesis

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Using the University of Georgia

Style Macro Package, Version 3.5

by

Michael A. Covington

Approved:

Major Professor: Abraham Baldwin

Committee: Benjamin Franklin
                    Isaac Newton

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
May 2007

The Dedication is optional, but if it is included, it should have a roman numeral page number but not be included in the table of contents. To achieve that, we declare it as a `\chapter*` in LaTeX.

ACKNOWLEDGMENTS

In a real thesis, this section would contain acknowledgments such as, "This work was funded by National Science Foundation Grant Number AAA-00-00000 (Benjamin Franklin, Principal Investigator)," and "I would like to thank John Doe for helping me proofread my thesis and Mary Roe for drawing my graphs."

The acknowledgments are included in the table of contents but do not have a chapter number. To achieve that, we declare them to be a `\pseudochapter` (which is defined only in `uga.sty`).

I would like to thank John Carroll for first pointing out to me that Georgia needed — but did not have — a LaTeX style sheet. Immediately I looked at the widely distributed Stanford, MIT, and University of Illinois style sheets and decided they would not do at all. And that's how I got into this.

I would also like to thank Mark Maloof for helping me find some bugs in the original version.

Zachary Hunter deserves special thanks for revising the UGA style file to work with the new version of LaTeX (2e) as well as the previous version (2.09).

The revisions in Version 3.0 of `uga.sty` are largely the work of Isidor Ruderfer.

Preface

If your thesis has a preface, this is where it goes. A preface is not an introduction, and most theses do not need them.

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LIST OF TABLES

WHAT LaTeX IS ALL ABOUT

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!

Deine Zauber binden wieder

Was der Mode streng geteilt...

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.

Computer scientists use LaTeX's "verbatim" format to display portions of computer programs in text, like this:

```
1   GO TO 2
2   GO TO 1
3   PRINT "THIS STATEMENT WILL NEVER EXECUTE"
4   END
```

There you have it.[1]

Whenever you quote parts of a computer program in English text, they should be set off by using typewriter type. The `PRINT` statement in the program above will never execute because the `GO TO` statement above it keeps execution from reaching it.

---

[1]This is a footnote. Notice that footnotes are single–spaced even though the text is double–spaced. Long footnotes are discouraged; either make important points in the text or leave them out.

FIVE IMPORTANT NOTES

2.1 LaTeX IS NOT A TYPEWRITER — NOR AN ORDINARY WORD PROCESSOR

The format that you get with LaTeX is more elegant than the simpler format in the Graduate School style manual and is not intended to match it perfectly.

LaTeX makes available to you *all* of the tools of fine book printing. For example, LaTeX has more degrees of vertical spacing available than other word processors do, and it uses them effectively. Likewise, LaTeX provides SMALL CAPITALS for situations where other software would only provide ALL CAPITALS.

The format produced by `uga.sty` has been reviewed by the Graduate School. If your thesis fails the format check, make sure you have followed the instructions for `uga.sty` (contained in the file `ugasample.tex`) and the instructions for LaTeX.

2.2 YOU CAN'T DO WITHOUT THE BOOK!

You are not expected to be able to use LaTeX without a manual. Don't even try — you'll waste a lot of time. The definitive manual for LaTeX is:

Lamport, Leslie (1994) *LaTeX: A Document Preparation System.* 2nd ed. Reading, Mass.: Addison-Wesley.

Alternatively, there is a good manual available on line whose author is named Oetiker. There are several versions. Use a search engine to search for "LaTeX Oetiker" and you'll find it.

2.3 The `uga.sty` style sheet adds to LaTeX but does not replace it

"How do I do so-and-so in `uga.sty`?" Almost always the same way as in plain LaTeX. The University of Georgia style sheet, called `uga.sty`, adds features to LaTeX; it does not take away what is already there.

2.4 Ragged right margins are optional

This section is typeset in "ragged right" format, in which LaTeX has been told not to force a straight right margin.

"Ragged right" is preferable if your thesis contains a large number of words likely to be hyphenated incorrectly, formulas, web addresses, or the like. To get it, put the two lines

```
\raggedright
\parindent 0.25pt
```

anywhere after the `documentclass` command and before `\begin{document}`.

You can also reduce the amount of hyphenation, without eliminating it totally, by following the instructions in the LaTeX manual.

2.5 Please let LaTeX do the layout…

Please do not use `\vspace`, `\hspace`, and other TeX commands that specify the precise location or spacing of items on the page. Leave the layout to LaTeX and `uga.sty`. Otherwise, very ugly things can happen.

Your thesis is like a volume in a series. It should look like the other theses and dissertations that were typeset using the same technology. Just as different volumes of the *Encyclopaedia Britannica* have exactly the same margins and typography, so should different theses from the same university, as far as technology permits.

2.6   PLEASE USE FLOATING FIGURES AND TABLES...

Please use the `figure` and `table` environments for your figures and tables. A picture or table should not interrupt the text the way a mathematical formula does. Instead, it should "float" to the nearest convenient location — which LaTeX will take care of automatically — and should be identified by number.

Frequently Asked Questions About Typing University of Georgia Theses with LaTeX and `uga.sty`

3.1 LaTeX itself

3.1.1 What is LaTeX?

LaTeX, by Leslie Lamport, is an extension of TeX, the computer typesetting system designed by Donald Knuth. This software system is used to typeset books, journals, papers, and theses in the mathematical sciences. Knuth and Lamport had two goals in designing it:

- To use the computer to equal the quality of the best conventional typesetting. No longer does "word processing" mean "a poor substitute for real printing."

- To separate the jobs of the *author* and the *typesetter.*

Other word processors turn the screen into a blank piece of paper and let you type on it. LaTeX is not your *typewriter,* it's your *typist.* For example, to mark the beginning of a chapter, you type something like this:

```
\chapter{Literature Review}
```

and LaTeX automatically determines what a chapter heading should look like. It does this by consulting a *style sheet.* You do not have to worry about whether you've hit Enter the same number of times at the beginning of each chapter, or whether all the chapter headings are centered and the margins are correct. That's the (automated) typist's job.

3.1.2   How is "LaTeX" pronounced?

The X in TeX is actually a Greek chi, with the sound of *ch* in Scottish *loch* or German *ach*. Thus, TeX is pronounced "tekh." It is short for Greek *tekhnē* "art, craft."

LaTeX is pronounced "lah-tekh" in the Northeast, "lay-tekh" in England and the South, and several different ways in the West.

3.1.3   What's it like to run LaTeX?

LaTeX is *not* a single integrated piece of software. It has several parts. The normal process for typing and printing a paper is as follows. On finding an error or discovering that a change is needed, you can go back to any earlier step at any time.

1. Use a text editor (Windows Notepad or whatever text editor you like) to type your document on a file whose name ends in .tex.

2. Go to a command prompt and run `latex` to create a `.dvi` file.

3. Optionally, preview the `.dvi` file on-screen. Some of us skip this step.

4. Run `dvips` to convert the `.dvi` file to PostScript.

5. Use GhostView to view the PostScript file and print it (even if you do not have a PostScript printer).

3.1.4   Who benefits the most from using LaTeX?

Those who need to typeset mathematical formulas or computer programs; those whose theses are likely to be published by a book publisher; and those who plan to submit their theses electronically.

3.1.5 WHO SHOULD *not* USE LATEX?

If you consider yourself a "computer dummy" and can use only the simplest software, or if you do not have the time or patience to learn a new set of technical skills, you won't like LATEX. On the other hand, you probably will not type your thesis correctly with a conventional word processor either. (Let's face it, typing a thesis correctly is a technical challenge, no matter what software you do it with!) You should hire a typist.

3.2 LATEX VERSIONS

3.2.1 WHAT ARE MIKTEX, EMTEX, TETEX, ETC.?

These are implementations of LATEX for particular computers, incorporating Knuth and Lamport's original computer programs plus various tools to make them easier to use or more versatile. All of them are 100% compatible with the original LATEX.

3.2.2 IS THERE LATEX FOR MACINTOSH, LINUX, AMIGA, SUN, BEBOX...?

Yes. LATEX has been ported to a huge variety of computers and produces *identical* output on all of them, using *identical* file formats. If you have Linux, you almost certainly already have LATEX.

3.2.3 WHAT IS LATEX 2_ε?

The version of LATEX that has been in use for the last several years. It was preceded by LATEX 2.09. Those are the only two version of LATEX that have been distributed widely. There will eventually be a LATEX 3, but not very soon.

3.2.4 Where do I get LaTeX?

You can download it free of charge from various sites; follow the links on Michael Covington's web page (*http://www.ai.uga.edu/∼mc*). You can sometimes borrow a CD-ROM containing MikTeX and GhostView from the Artificial Intelligence Center.

3.2.5 Where is the documentation for LaTeX?

In the book *LaTeX: A Document Preparation System,* by Leslie Lamport, 2nd edition, published by Addison-Wesley. **You must buy this book.** Other books about LaTeX are useful but are not the official guide.

3.2.6 Where can I get help with LaTeX?

First, read Lamport's book. *You cannot get along without it.*

Second, you can ask questions on the newsgroups `comp.text.tex` (international) and `uga.tex-latex` (local, only accessible on campus).

Third, if you have problems that are specific to `uga.sty`, and particularly if `uga.sty` does not appear to be meeting UGa thesis format requirements, please contact me (Michael Covington, mc@uga.edu).

3.3 The University of Georgia style sheet

3.3.1 What is `uga.sty`?

A style sheet for LaTeX that makes it follow the format for University of Georgia theses and dissertations.

3.3.2 Where do I get `uga.sty` and how do I install it?

Download it from `http://www.ai.uga.edu/ftplib/tex/uga-thesis`. **Be sure to get the latest version.**

Install it by putting it in the same directory as your thesis, or in directory `texmf/tex/latex` of your TEX system.

Be sure to get the file `ugasampl.tex` along with it.

3.3.3 How do I use `uga.sty`?

For a quick summary, see Fig. 3.1. For details, see the file `ugasample.tex`.

3.3.4 Do I have to get `uga.sty` before typing my thesis?

No. You can type your thesis using the LATEX `report` documentclass (described in Lamport's book); this will enable you to produce neat, single-spaced copies of the work in progress. When it's finished, get `uga.sty` and make the small additions to your thesis that are described there.

3.3.5 What are the required parts of a thesis typed with `uga.sty`?

They are described in `uga.sty` itself, which you can read with your text editor. Alternatively, you can use `ugasample.tex` as sample to imitate.

3.4 Troubleshooting

3.4.1 Why is the text too high or low on the page?

See Appendix A, p. 25.

3.4.2 Why is there a space before a footnote number?

If your footnote numbers come out positioned like this [8] rather than this[8], it's because you're leaving a space before the `\footnote` command.

```
Type like this.\footnote{Here's the note.}
Not like this. \footnote{Here's the note.}
```

```
\documentclass[12pt]{report}
% Any other \usepackage commands go here, BEFORE uga
\usepackage{uga}
\usepackage[ps2pdf, bookmarks=true, breaklinks=true]{hyperref}

% The following 2 lines are OPTIONAL to turn off all hypenation
% and print with "ragged" right margins
\raggedright
\parindent 0.25in

\title{Title of Thesis\\
       Broken into Lines\\
       As Appropriate}

\fulltitle{Title of Thesis Not Broken Into Lines}

\author{Your Name Here}

\previousdegrees{B.A., Name of University, 1977 \\
                 M.S., Some Other University, 1978}

\thisdegree{Master of Science} % or Doctor of Philosophy, etc.
\thesistype{Thesis}         % or Dissertation
\thesismonth{May}           % put the date OF GRADUATION here...
\thesisyear{2005}           % put the year OF GRADUATION here...

\indexwords{keywords for indexing your thesis in library catalogs}

\professor{Abraham Baldwin}      % Major Professor
\secondprofessor{Alonzo Church} % Co-Major Professor if you have one
\memberi{Benjamin Franklin}      % Committee member
\memberii{Isaac Newton}          % Committee member
% Use \memberiii, \memberiv, \memberv for up to 3 more members if needed.

\dean{Maureen Grasso}            % Dean of the Graduate School

\begin{document}
\pagenumbering{roman}    % Use Roman numerals until chapters start.

\begin{abstract}
Text of abstract goes here.
\end{abstract}

\maketitle    % Creates title page, copyright page if any, and approval page.

\chapter*{Dedication}
Dedication, if any, goes here.
It is a "\chapter*" so it is not in the table of contents.

\pseudochapter{Acknowledgments}
Text of acknowledgments goes here.
It is a "\pseudochapter" so it goes in the table of contents but has no chapter number.

\tableofcontents
\listoffigures   % Optional - Omit this line if you don't want a list of figures.
\listoftables    % Optional - Omit this line if you don't want a list of tables.

\newpage
\pagenumbering{arabic}  % Ordinary pages have Arabic numerals.

\chapter{Title of Chapter Goes Here}
Text of first chapter goes here.

\chapter{Title of Chapter Goes Here}
Text of second chapter goes here.

\begin{thebibliography}{99}
...
\end{thebibliography}

\appendices  % Indicates that appendices follow.  If there's only one, use \appendix instead.

\chapter{Title of First Appendix}
Text of first appendix goes here.

\chapter{Title of Second Appendix}
Text of second appendix goes here.

\end{document}
```

Figure 3.1: Template for formatting a thesis with `uga.sty`.

A useful trick is to put `%` at the end of one line (to comment out all the remaining blank space) and then `\footnote` at the beginning of the next line.

3.4.3 Why is my table of contents blank or incorrect?

You must run LaTeX twice in order to get a correct table of contents. The first time, it keeps records of where things are; the second time, it actually generates the table of contents. If the table of contents is long, you may need to run LaTeX three times to ensure that adequate space is left for it.

3.4.4 Why is there too much space after some of the periods?

LaTeX normally assumes that every period marks the end of a sentence, so it leaves extra space after it. You should normally use a required space (`~`) after every period that does not mark the end of a sentence. Type "`T.~S.~Eliot`" to print "T. S. Eliot" or the like.

Beginning with `uga.sty` version 2.0 (December 2001), this is no longer a problem because `uga.sty` tells LaTeX not to treat periods specially; the same amount of space follows each word whether or not it ends with a period. This is known as "French spacing" and is an accepted practice in the printing industry.

3.4.5 Why do some words hang out past the right margin?

When LaTeX cannot break a line satisfactorily, it leaves a word sticking out into the margin and gives you an "Overfull hbox" error message. It is up to you to rearrange the text so that it fits.

3.4.6 What is an overfull hbox?

See previous question.

3.4.7 What is a "Package hyperref warning"?

Most people now use the `hyperref` package to generate hyperlinks to their chapters and sections in the eventual PDF output.

This is good, but `hyperref` complains violently if there is anything other than plain text in a section title. It also complains if you use `\pseudochapter`. Just ignore the warnings.

3.5 Character set and typography

3.5.1 How do I type a percent sign?

See Lamport's book. A quick answer: Type "`\%`".

3.5.2 How do I type a tilde ($\sim$)?

This character often occurs in web addresses. In LaTeX, when you type "`~`" you get a blank. (Specifically, you get a "required space," a space that cannot be broken across a line break.) To get "$\sim$" type "`$\sim$`".

3.5.3 What are *italics* used for?

All of the things that would be underlined in a handwritten document, including titles of books, foreign words, and the like.

In linguistics, it is normal to put foreign words in italics and their definitions in single quotes. For example, Agatha Christie's famous detective is named after the French word *poireau* 'leek'.

3.5.4 What is <u>underlining</u> used for?

Almost nothing. Roman type is not normally underlined; use italics instead.

3.5.5 WHAT IS `typewriter type` USED FOR?

Computer program languages, whether displayed or quoted in text. For example, here is part of a program written in C:

```
for(i=100,i>0,i--)
 {
   printf("%d bottles of beer on the wall...\n");
 }
```

It demonstrates how to use the `for` statement to count down from 100 to 1.

3.5.6 WHAT IS THE `verbatim` ENVIRONMENT USED FOR?

Computer programs, as just demonstrated.

3.5.7 WHAT IS `sans-serif type` USED FOR?

Almost nothing except labels within illustrations.

3.6 BIBLIOGRAPHIES

3.6.1 HOW DO I TYPE THE BIBLIOGRAPHY?

See Lamport's book and the examples in `ugasample`tex.. LATEX allows you to refer to bibliography items in your text with markers such as `\cite{Chomsky}` then have LATEX automatically turn these into bracketed numbers in the bibliography.

With `uga.sty`, simply use the `thebibliography` environment exactly as Lamport describes it. This will produce a bibliography in the form of an unnumbered chapter at the end of your thesis.

3.6.2 WHAT IF EACH CHAPTER HAS ITS OWN BIBLIOGRAPHY?

If you have bibliographies at the ends of the individual chapters, use the environment `chapterbibliography` instead of `thebibliography`. It works *exactly* the same way except

that the bibliography becomes a normally numbered section, not an unnumbered chapter. There is an example of this in `ugasampl.tex`.

The `chapterbibliography` environment is provided by `uga.sty`.

3.6.3 WHAT IF I DON'T LIKE BRACKETED NUMBERS?

Here is an example of a trick to get LaTeX to print a bibliography without bracketed numbers. Basically, you are telling LaTeX to put the author's name in place of the bracketed number. Note that this involves using `\item` rather than `\bibitem`.

```
\begin{thebibliography}{}

\item[Covington, Michael A.]
\emph{Natural Language Processing for Prolog Programmers.}
Englewood Cliffs, N.J.: Prentice Hall, 1994.

\item[O'Keefe, Richard A.]
\emph{The Craft of Prolog.}
Cambridge, Mass.: MIT Press, 1991.

\end{thebibliography}
```

When doing this, don't use the `\cite` command; instead, handle your references manually. You can do *exactly* the same thing with `chapterbibliography`.

3.7 LAYOUT AND ILLUSTRATIONS

3.7.1 HOW DO I TURN OFF JUSTIFICATION?

Justification means printing with a straight right margins. It is not required for University of Georgia theses, and if your text contains many formulas, web addresses, or other unbreakable items, you may get considerably neater results by turning it off. To do this, issue the command

```
\raggedright
```

immediately after `\begin{document}`.

You may need to turn off justification only within a bibliography. In that case, you should put the `\raggedright` command right after `\begin{thebibliography}` or right after `\begin{chapterbibliography}` as the case may be. It will then affect only the bibliography.

3.7.2 How do I put a picture into my thesis?

See Lamport's book. Here's the basic process...

1. Learn the difference between a vector ("draw") program and a bitmap ("paint") program. Vector programs, such as Corel Draw and Micrografx Windows Draw, tell the computer to draw lines at particular positions; they are the right tool for generating diagrams of all types. Bitmap programs are *only* for working with digitized photographs and the like; their output has an unpleasant stairstep appearance when enlarged or resized.

2. Produce professional-quality artwork. (You may want to hire a professional illustrator.) Artwork in your thesis should look as good as the artwork in published books.

3. Save your artwork as an encapsulated PostScript (EPS) file *with no TIFF header*. (The drawing software may ask you whether you want a TIFF header; say no.)

4. Use the `graphics` package (described in Lamport's book) or the `epsf` package to incorporate your art into your LaTeX document. One way to do this is as follows:

   (a) Add the command `\usepackage{epsf}` right after `\documentclass`.

   (b) Use the command `\centerline{\epsffile{xxxxxxx.eps}}` (with the appropriate filename substituted) to put the picture in your document. Normally this will be within a `figure` environment as described in Lamport's book.

3.7.3 How do I put a Windows screen shot into my thesis?

When writing about software, you many need a picture of the computer screen with a program running. Under Windows 95 and up, you can "take a picture" of the screen, by

pressing Print Screen (or Alt-Print Screen if you only need the current window). This puts a copy of the screen into the Windows clipboard. Then open up your favorite paint program (bitmap program) and choose Paste. Edit the picture to your satisfaction, save it, and export it as encapsulated PostScript. For the rest of the process, see the previous question.

Chapter 4

The Craft of Scholarly Typing

4.1 An exhortation

If you have come to the University for a graduate degree, scholarly writing is one of the crafts in which you are being trained. This includes scholarly typing and word processing. We assume that you will be writing about your subject for the rest of your life. This is more likely to be true than you realize.

LaTeX provides you with all the tools of fine book printing. This includes quite a few things that were not available on typewriters. Accordingly, when using LaTeX, you must learn some new things about printed language.

4.2 Some common punctuation errors

4.2.1 Hyphens and dashes

LaTeX distinguishes four kinds of horizontal lines between characters.

- The minus sign, $-$ (typed `$-$`), is used only in math mode. Always go into math mode when you want to mark a number as negative.

- The hyphen, - (typed `-`), is used between parts of a word, as in "so-called" or "heavy-handed."

- The short dash (en dash), – (typed `--`), goes between numbers in sequences, as in "1861–65."

- The long dash (em dash), — (typed `---`), goes between parts of sentences and is set off by spaces — like this. In good writing, it is uncommon; as alternatives, consider using a semicolon or starting a new sentence.

4.2.2 QUOTATION MARKS

In LaTeX you must type your quotation marks ``like this'' in order to get them to print correctly "like this." It is not correct to type "like this."

Periods and commas "slide under" quotation marks so that they adhere to the words within them. Correct usage looks "like this." Incorrect usage looks "like this".

In computer science and linguistics, this rule sometimes does not apply, because it may be important to show that the period or comma is not part of the quoted material. If you cannot get around this by rearranging the sentence, it is acceptable to put the period or comma outside the quotes.

Single quotation marks ('like this') are used in linguistics to give the meanings of words. Thus, French *chateau* 'castle' comes from Latin *castellum* 'fortress.'

4.2.3 PUNCTUATION AROUND MATHEMATICAL FORMULAE

Do not let the punctuation of your sentence intrude into a displayed mathematical formula. When a sentence ends with a displayed formula, end the sentence with a colon. Thus we conclude:

$$a = \sum_{x=1}^{\infty} p(x) = q(x)$$

The formula does not end with a period.

4.3 KNOWING THE CHARACTER SET

Part of knowing your subject is knowing its notation. If you are vague on the difference between $\emptyset$ and ϕ, or ω and w, consult some well-produced reference books (not scruffily typed conference papers).

A picture could go here.

Figure 4.1: This is an example of a figure.

A picture could go here.

Figure 4.2: This is another example of a figure. It has a very long caption which should wrap onto the next line.

Remember that in good printing, *underlining is almost never used.* Underlining is the handwritten way of indicating italics. Now that you have italics, use them. Instead of wavy underlining (for vectors, etc.), use boldface.

4.4   FIGURES AND TABLES

In a well-produced book, figures and tables do not interrupt the text like mathematical formulae. Instead, they "float" to the nearest convenient location and are identified by number. If there is no convenient place at the top or bottom of a page, they are placed on a separate page.

See Lamport's book to learn how to control the placement of figures and tables. Nothing is added or changed by `uga.sty` — LATEX still works exactly the way Lamport says.

Near here, you will see Figures 4.1 and 4.2. Note that each picture's caption comes below it. That is achieved by putting the `\caption` command *after* the figure.

Near here, you will also see Table 4.1. Its caption comes above it. This is achieved by putting the `\caption` command *before* the table.

Table 4.1: Some institutions and their mascots.

Institution	Location	Mascot
University of Georgia	Athens	Bulldawg
Georgia Tech	Atlanta	Insect
UCSC	Santa Cruz	Banana Slug

CHAPTER 5

EXAMPLE OF A CHAPTER IN MANUSCRIPT FORMAT[1]

[1]Covington, M. A., and B. Franklin. Submitted to *Journal of Irreproducible Results,* 11/30/2001.

5.1 INTRODUCTION

Here is a demonstration of how to format a chapter that consists of an article submitted to a journal. The beginning of this chapter was typed as:

```
\chapter[Example of a Chapter in Manuscript Format]
{Example of a Chapter in Manuscript Format%
\footnote{Covington, M. A., and B. Franklin.
Submitted to \emph{Journal of Irreproducible Results,} 11/30/2001.}}
\newpage
```

Note that:

- `\chapter` has two arguments, the chapter title by itself (for the table of contents) and the chapter title with a footnote;

- immediately before the footnote is a percent sign (`%`) to comment out the remaining blank space on the line, so that there is no space before the footnote number;

- after the chapter title is a `\newpage` command.

At the end of this chapter is a `\chapterbibliography` environment that works exactly like `thebibliography` except that it makes a section at the end of a chapter rather than a chapter at the end of the book.

5.2 REFERENCES

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

[2] Knuth, D. E. (1984) *The TeXbook.* Reading, Mass.: Addison–Wesley.

[3] Lamport, L. (1994) *LaTeX: A Document Preparation System.* 2nd ed. Reading, Mass.: Addison-Wesley.

Bibliography

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

[2] Knuth, D. E. (1984) *The TeXbook.* Reading, Mass.: Addison–Wesley.

[3] Lamport, L. (1994) *LaTeX: A Document Preparation System.* 2nd ed. Reading, Mass.: Addison-Wesley.

IMPORTANT NOTE ABOUT MARGINS

A.1 GENERAL TACTICS

No two printers are alike. Please print a few pages and *measure* them. LaTeX can send commands to your printer, but it can't see whether they are being obeyed!

Check the `dvips` problem described below. If, after tackling that, you still need to make adjustments to get correct margins on paper (1.5 inches on the left and 1 inch on the right), add commands such as:

```
\hoffset = 0.5in    % shift 0.5 inch to the right
\voffset = -0.1in   % shift 0.1 inch up
```

in your `.tex` file right after after `\usepackage{uga}`.

A.2 THE A4 PAPER SIZE PROBLEM

If your printouts are consistently too high or too low on the page, and you are generating PostScript files using the `dvips` command, you are probably generating output for A4 (11.7-inch) paper.

That is the size of paper used in Europe. American ("letter") paper is only 11 inches long and is the size specified for University of Georgia theses (and their electronic images).

As a quick check, try typing the `dvips` command with the argument `-tletter`, like this:

```
dvips -tletter filename
```

If that cures the problem, you can fix it permanently by editing the file `config.ps` to make letter size (11-inch) paper the default. See the `dvips` documentation for details, or obtain a corrected `config.ps` from the Artificial Intelligence Center at:

`http://www.ai.uga.edu/ftplib/tex/uga-thesis`

Appendix B

Customizing the Table of Contents

On rare occasions the table of contents will not come out formatted the way you'd like. Here's how to control it. *Most people will not need to do this* and can ignore these notes.

Every time you run LaTeX, it writes the table of contents on a file whose name ends in `.toc`, and reads and prints the `.toc` file from the *previous* run. That's why you have to run LaTeX twice to get a correct table of contents.

If you need to alter your table of contents (e.g., by inserting a page break), you can edit the `.toc` file in between two runs of LaTeX. For example, you can insert `\newpage` to generate a page break. Note that this change will not last because LaTeX will write a new `.toc` file ever time it runs.

Alternatively, you can add a command to your `.tex` file that will add something to the contents. For example, just before beginning a particular chapter, you can execute the command:

```
\addtocontents{toc}{\newpage}
```

to cause a page break at the corresponding place in the table of contents.

Common PDF Problems

When you convert your thesis from PostScript to PDF (with Adobe Acrobat Distiller or other suitable software), you may discover two problems.

C.1   Text shrinks when converted to PDF

This may mean that your PostScript file was formatted for A4 (11.7-inch) paper, and PDF is shrinking it to fit on American 11-inch paper.

C.2   Type looks blurred or pixellated

This generally means you are using the old bitmap versions of the TeX fonts rather than the PostScript versions. As a quick check, try adding the command `\usepackage{times}` right after `\documentclass`. This will change the typeface. If the new typeface looks a lot smoother, you've identified the problem but not cured it.

To get the PostScript TeX fonts, get your system support people to reconfigure `dvips`, or download and install a newer version, or simply run LaTeX on a computer that has more up-to-date software. The updated `config.ps` file available from

> `http://www.ai.uga.edu/ftplib/tex/uga-thesis`

will solve the problem.

Please note that PDF conversion is not affected by `uga.sty` and the author of `uga.sty` cannot undertake to solve other problems with it.

How to Cite Web Pages

Your bibliography entries should follow whatever format is standard in your field. If completely stymied, see the *Chicago Manual of Style* (which gives *two* formats, one for humanities and one for sciences; don't mix them up) or the *Publication Manual* of the American Psychological Association.

Even so, you will probably still be in doubt about how to cite web pages. The way I see it, The Web is not a publisher. Thus, a web address is not a sufficient citation for a web page. Instead, you must cite the document itself (indicating where and when it originated) and then add information about the web address.

If the paper has been published, and you got a copy from the author's web site, your job is easy. Just do something like this:

> Newton, Isaac (1672) On the refraction of coloured light. *Journal of Irreproducible Results* 23:456-789. Web: http://www.trinity.cam.ac.uk/newton/colour.pdf.

That is, add the web information at the end of a normal citation.

If the paper is available only on the author's web site (at an institution or corporation), cite the institution or corporation as the publisher, something like this:

> Newton, Isaac (1672) On the refraction of coloured light. Trinity College, Cambridge. Web: http://www.trinity.cam.ac.uk/newton/colour.pdf.

The idea is to cite it just like a privately distributed paper except that you add the web address.

If the web site *is* a publisher (e.g., an online journal), then it will probably give instructions for citation. Do not copy numbers into a bibliography entry if you don't know what they mean.

Consult your major professor for more advice, since the details will depend on other aspects of your bibliography format.

Note that the character $\sim$ in web addresses is typed `$\sim$`.

Note also that by itself, LaTeX will not hyphenate a URL. It is up to you to indicate with the symbol `\-` the places where hyphens are permitted. Always hyphenate within words, not between compound words, so that the reader will know that the hyphen was not present in the original.