UThesis

Version: uthesis-v12

A LaTeX Document Class for Dissertations and Theses at The University of Toledo

⟹ A Walkthrough of *UThesis* Commands and Environments ⟸

Dr. Michael Dowd
4120 University Hall
Department of Economics
University of Toledo
Toledo, Ohio 43606

419.530.2572

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UThesis is a LaTeX document class that facilitates a uniform format for dissertations and theses at the University of Toledo. It transforms a draft document into one that is guaranteed to satisfy all style and formatting requirements established by the Graduate Faculty. *UThesis* was created so UT graduate students could minimize time spent worrying about style and formatting issues and, instead, could concentrate on the content of their dissertation/thesis.

This package is for UT students generating their dissertation/thesis via the LaTeX document preparation system – it is of no use to students using *Microsoft Word*.

This package would not have been possible without drawing code included with standard LaTeX distributions and from LaTeX code posted on the web. While some postings were anonymous, authors of such code I can identify include: Stephen Page for *doublespace.sty*, David M. Jones for *hangcaption.sty*, Leslie Lamport and David Carlisle for *ifthen.sty*, and David Carlisle for *indentfirst.sty*. I am grateful to the known and anonymous contributors of LaTeX code because they have helped and will continue to help UT graduate students prepare their dissertations and theses.

Contents

List of Tables

List of Figures

List of UThesis Commands

List of UThesis Environments

1 An Overview of UTThesis

1.1 First Things First: UT formatting requirements

The Graduate Faculty at the University of Toledo have established the following handbook to describe the regulations regarding the style and formatting of dissertations and theses at UT:

Manual for the Formatting of Graduate Dissertations and Theses

(www.utoledo.edu/graduate/files/Formatting_Manual_12a.pdf)

The regulations in that handbook range from specifying which text font you are permitted to use to prescribing which sections/preliminary pages may appear in your document. (*Throughout this document I'll refer to that handbook simply as the "UT Manual."*) If you examine the *UT Manual* you'll see that it is comprised of approximately 30 pages of rules and regulations governing *how to* format your dissertation or thesis. The "bad news" is that's a lot of regulations to satisfy before your document can be approved by the UT Graduate College. The "good news" is that *UTThesis* will automatically handle those 30 pages of rules and regulations for you.

UTThesis is a LaTeX document class that facilitates uniform style and formatting of dissertations and theses at the University of Toledo. If you use *UTThesis* commands properly and follow the instructions in this document, *UTThesis* will transform (i.e., reformat) the appearance of your draft document into one that is *guaranteed* to satisfy all style and formatting requirements specified in the *UT Manual*.[1]

1.2 What will UTThesis do for you?

Some of the more obvious changes that *UTThesis* automatically performs include: (a) reformatting textual material according to margin and spacing requirements, (b) generating level-specific page/section headings and locating such headings appropriately on the page, (c) adjusting text to double-spacing or single-spacing when required, (d) printing page numbers in lower-case roman numerals (when required) or arabic numerals (when required), etc., etc., etc. (The number of general formatting issues covered by *UTThesis* is just too long to list here). In addition to general formatting issues, *UTThesis* will automatically generate the pages/sections listed below and will format them according to *UT Manual* specifications:

- Title Page
- Copyright/Blank Page
- Abstract Page
- Dedication Page
- Acknowledgments
- Table of Contents
- List of Tables
- List of Figures
- List of Abbreviations
- List of Symbols
- Preface Section
- Chapters
- References
- Appendices

Sample Pages: If you want to see how each of the above sections/pages are to be formatted, please examine the 17 "sample pages" included at the end of the *UT Manual*. Those sample pages were generated using *UTThesis*.

Very Easy to Use: Don't let the length of this document give you the wrong impression — *UTThesis* is not complicated and is quite easy to use (you need only a basic working knowledge LaTeX). A template file with detailed instructions is provide to get you started (see section 1.3

[1] This "guarantee" comes from my knowledge of *UT Manual* requirements: in addition to writing *UTThesis*, I also authored the *UT Manual* mentioned above (based on instructions from the UT Graduate Council, of course).

for details). In a short amount of time even a relatively inexperienced LaTeX user will generate a dissertation/thesis that satisfies all *UT Manual* style and formatting requirements. You do not have to concern yourself with any prescribed formatting rules in the *UT Manual* because those rules have already been incorporated into internal *UThesis* code.

To process your LaTeX document you'll use new commands to enter your degree, your advisor's name, committee member names, etc. There are also several new environments you'll use to generate the various pages/sections listed above. This document describes in detail the use of these commands and environments. As you'll see, *UThesis* is *very* easy to use.

1.3 Template File (to get you started)

The template file "`UThesis_Template_(v12).tex`" is provided to show you the various required and optional *UThesis commands* and *environments*. Included in this distribution are both the LaTeX template file and its corresponding PDF file:

```
UThesis_Template_(v12).tex

UThesis_Template_(v12).pdf
```

The "`UThesis_Template_(v12).tex`" file tells you exactly what information to enter and where to enter that information (e.g., your document's title, your name, your advisor's name, etc.). First, enter the information and run LaTeX over that file to review the output. Then *experiment* with the options in the template file: change one of the options – run LaTeX – and examine its effect. Then change another option – re-run LaTeX – and see how that affects your output file. Such experimentation will show you how easy *UThesis* is to use and the full range of *UThesis* options.

1.4 Pre-loaded *.sty files

The file "`uthesis-v12.cls`" does all of the work for you — it contains all of the internal LaTeX commands used to satisfy the prescribed formatting requirements specified in the *UT Manual*. The following files have been pre-loaded into that file.

- doublespace.sty
- ifthen.sty
- indentfirst.sty
- hangcaption.sty

Therefore, you do not have to include such files in a \usepackage{} command should you want to use their features.

2 While Writing your Document, Please Consider ...

2.1 Readability

Your dissertation or thesis is part of the intellectual legacy of this university — a legacy shared by past students and faculty and one to be enjoyed by future students and faculty. Although your dissertation/thesis is, of course, *your* document, you are not writing for yourself. You are writing it so that others can easily read, evaluate, and cite your scholarly work. Therefore, when considering alternative ways of presenting material in your document, please give preference to the method that best serves the reader.

LaTeX Issues: First, some students/advisors have questioned whether the font size for a heading to a chapter, section, etc. is "too large" or "too small" relative to text size. Note that the relative heading-to-text size is appropriately generated by LaTeX (and has been approved by the Graduate Faculty). Hence, do not attempt to alter such font sizes. Second, some students may

be tempted to force changes to space surrounding equations, tables, figures, etc. *Do not do so.* LaTeX is quite sophisticated and it follows well established conventions when dealing with such spacing issues. Forcing a spacing change at a particular point on a page can cause LaTeX to adjust spacing across the page — sometimes with undesirable and asymmetric results. The cost of this is will be in terms of overall "readability" of your document.

2.2 Spacing and the invisible tilde character (~)

LaTeX adds an extra space after a period, which improves the appearance of sentences within a paragraph. However, there are (at least) two situations where you do not want that extra space to appear. The first situation is when you include a middle initial in a name and the second is when you provide an abbreviation to an academic title. In both situations you should insert the invisible tilde character (`~`) between the period and the subsequent character. That is, instead of entering "`Elmer J. Fudd`", you should enter "`Elmer J.~Fudd`"; instead of entering "`Dr. Roy Hinkley`", you should enter "`Dr.~Roy Hinkley`". Table 2.1 illustrates the improved output when using the invisible tilde character (`~`) in the appropriate situation.

Table 2.1: Improved output when using the invisible tilde character (~)

	Input	Output	Input	Output
Inferior:	`Elmer J. Fudd`	Elmer J. Fudd	`Dr. Roy Hinkley`	Dr. Roy Hinkley
Superior:	`Elmer J.~Fudd`	Elmer J. Fudd	`Dr.~Roy Hinkley`	Dr. Roy Hinkley

2.3 Primers on Cross-References and the \caption[]{} Command

Since UThesis was first used in 1995, hundreds of students and advisors have asked me for guidance on a) LaTeX's cross-referencing capabilities and b) the difference between the text in a table/figure's caption and the corresponding entry in the *List of Tables/List of Figures*.

- Appendix A (p. 21) provides a primer on how to cross-reference equation numbers, table numbers, figure numbers, chapter numbers, section numbers, page numbers, etc.

  By following a labeling routine when establishing a table, figure, equation, section, etc., students can save many, many hours of editing by letting LaTeX "keep track" of referenced table numbers, figure numbers, etc. This feature is especially helpful when students must change the location/order of sections, equations, tables, etc. — because LaTeX will automatically adjust references to such relocated/reordered material. See Appendix A for specific examples.

- Appendix B (p. 24) provides a primer on how the `\caption[]{}` command can be used to have a table/figure caption text be different from the corresponding entry in the *List of Tables/List of Figures*. This is an important feature because though captions may be "long" (when appropriate), it is preferred (not mandated) that corresponding entries in the *List of Tables/List of Figures* should not, when possible, exceed one or two lines.

  Because the caption text to a table/figure must fully describe the content of that table/figure, *caption length should not be influenced by space considerations.* However, the only purpose of an entry in the *List of Tables/List of Figures* is to provide sufficient information about a table/figure that directs readers to the appropriate page where they can examine the table/figure — and review its full caption. *Hence, space considerations are important when determining the length of an entry in the List of Tables/List of Figures.* See Appendix B for specific examples.

2.4 Electronic Theses and Dissertations (ETDs)

An "ETD" is an "electronic thesis or dissertation." The College of Graduate Studies no longer accepts paper copies of dissertations or theses. Instead, all document must be submitted in *electronic* format — when you submit your document you will simply upload a "PDF" version of your document to the Graduate College. Please note the following important issues.

A. Verify that Page Scaling Does Not Occur

When generating your PDF file, examine the settings on your software package to verify that page content is not "shrunk" or "scaled" during the "dvi-to-ps" or "dvi-to-pdf" or "ps-to-pdf" conversion process (forgetting to do this is a common error). If page content is scaled, your dissertation/thesis will be rejected by the Graduate College.

B. Verify that Fonts are Embedded in Your PDF File

Be sure to "embed all fonts" when generating your *.pdf file. This will guarantee the consistent appearance of your document's text, mathematical expressions, and symbols across computers and printers. If you do not embed fonts then what readers see will depend on the fonts resident on *their own* computers/printers. If their local fonts are not the exact fonts used to generate your PDF document, the reader might see gibberish when attempting to read or print your PDF file. In contrast, if you "embed" fonts, the reader will see exactly what you wrote when you converted your document to PDF format. Hence, embedding fonts is critically important when generating the electronic version of your document.

From the *UThesis Manual*, Professor Wade Lee in the library (419.530.4490) will provide assistance in converting your *.dvi or *.ps file to a "font embedded" PDF document. Alternatively, you may contact me and I'll be happy to convert your *.ps file to a font-embedded *.pdf file.

2.5 UThesis error messages displayed on the *.dvi file

Regarding the title page, copyright notification page, and abstract page, *UThesis* will notify you if a) a required *UThesis* command was omitted or b) if information for such a command was omitted. If a *UThesis* error occurs, LaTeX will process your document but *UThesis* will display a specific error message **on the *.dvi output file** at the exact location where the error impacts the document. For example, section 3.4 (p. 7) explains that you must enter the exact description of your degree within the braces of the newly created `\degree{}` command. If you do not do so *UThesis* will generate the following error message on your *.dvi output file:

Error: \degree{} was omitted

As an alternative example, if you included the `\conferraldate{}{}` command (section 3.5, p. 7) but did not provide a month or year within its two sets of braces, the following error message would appear on the title page where conferral date information should have appeared. That is, LaTeX will continue to process your document but the following error message would appear on your *.dvi file at the location where the conferral month and year should appear:

Error: \conferraldate{}{} is empty

The lesson here is to pay-attention to your *.dvi file: it will provide *some* guidance when such errors occur.

3 Order of Commands/Environments within Your Document

This section provides a detailed explanation of each LaTeX and UThesis command and environment that can/must be employed in your document. By reviewing the file "`UThesis_Template_(v12).tex`" you can experiment with the various options to determine the final form of your dissertation/thesis.

3.1 Loading UThesis

The following are two standard LaTeX commands, with the first command loading the document class file "`uthesis-v12.cls`." Do not alter either of the following commands in the file `UThesis_Template_(v12).tex`.

```
\documentclass{uthesis-v12}
\begin{document}
```

The `\title{}` and `\author{}` commands are also standard LaTeX commands. Insert the title of your dissertation/thesis within the `\title{}` command. Examples:

```
\title{Rabbit Season? Duck Season?  A Holistic Approach to Anger Management}
```

```
\title{A Game-Theoretic Approach to a General Equilibrium Model
       \protect\\ with Asymmetric Price Information and No Goods}
```

The second example above illustrates how to produce a line break in the title of your document: instead of simply using the common "`\\`" command, precede that line break command with the `\protect` command. (Be sure to delete the "`\protect\\`" code from the template file's sample title if you do not want to produce a line break)

Next, insert your full name within the `\author{}` command — as you want it to appear on the title page, copyright page, and abstract page. Examples:

```
\author{Elmer J.~Fudd}
\author{Elmer Jehoshaphat Fudd}
```

Significance ..... UThesis will use the information provided by the `\title{}` and `\author{}` commands (along with that from subsequent commands described below) to automatically generate the document's title page.

Reminder ..... See section 2.2 (p. 3) for the use of the invisible tilde ("`~`") character when entering a middle initial.

Formatting Issues .... The title page is the first page of your document (i.e., page number "i"). The *UT Manual* states that although this page number is counted in the pagination it is not printed on the title page. (Do not be concerned about this issue: UThesis automatically handles this for you.)

3.2 \copyrightpage{}

The UT *Manual* mandates the second page of every dissertation/thesis to be either (a) a copyright notification page or (b) a blank page. The UTThesis command `\copyrightpage{}` controls for this requirement by having you enter either "yes" or "no" within the braces of this command:

`\copyrightpage{yes}` ..... The second page of your document will be a copyright notification page.

`\copyrightpage{no}` ..... The second page of your document will be a blank page.

Notes:

Significance ..... The name on the copyright notification page will based on your input to the `\author{}` command described in section 3.1 (p. 5) and the copyright year will based on your input to the `\conferraldate{}{}` command described in section 3.5 (p. 7).

Case–sensitive ..... Input to this command is case-sensitive: any misspelling or mixing upper- and lower-case letters results in `\copyrightpage{}` defaulting to the "yes" option.

Default ..... Not including the `\copyrightpage{}` command in your LaTeX file results in the default option of having the second page of your document being a copyright notification page.

Formatting Issues .... The UT *Manual* requires that this page be counted in the pagination as page "ii" but that its page number not be printed on the page. (Again, UTThesis automatically handles this for you.)

3.3 \mydocument{}

Use the `\mydocument{}` command to indicate whether your document is a Ph.D. Dissertation, a Master's Thesis or a Master's Project. That is, you must choose one of the following options:

```
\mydocument{Dissertation}
\mydocument{Thesis}
\mydocument{Project}
```

Significance ..... Your input to this command defines the document and it will appear on the top line of the title page.

Case–sensitive ..... Input to this command is case-sensitive: any misspelling or mixing upper- and lower-case letters results in `\mydocument{}` defaulting to the "Thesis" option.

3.4 \degree{}{}

You need to provide two distinct inputs into the `\degree{}{}` command. In the first set of braces you need to specify the exact degree you will receive. Some example are: Masters of Arts, Masters of Science, and Doctor of Philosophy. In the second set of braces you need to state the specific discipline or area for that degree (e.g., Economics, Education, Engineering, etc.). Students should consult their committee chair and/or the Graduate College if they have any questions about the above information. Examples:

```
\degree{Master of Arts}{Economics}
\degree{Doctor of Philosophy}{Engineering}
```

Significance ..... Your input defines the degree, which appears on the title page and the abstract page.

3.5 \conferraldate{}{}

You also need to provide two distinct inputs into the `\conferraldate{}{}` command. The month and year your degree will be *conferred by the university* are to be included in the first and second set of braces, respectively. Note that the month and year are not those when your document was "defended" or "approved" but when degree will be *conferred*.

```
\conferraldate{June}{2012}
```

Significance ..... This information will appear on the title page, copyright notification page, and the abstract page.

3.6 Title Page Signature Lines

3.6.1 Consistent Presentation

Your dissertation/thesis must be signed by your committee chair and the Graduate College Dean — and, perhaps, by other members of your committee (see sections 3.6.2, 3.6.3, and 3.6.4). LaTeX*Thesis* automatically generates a title page signature line for each individual and prints their name below their signature line. The LaTeX *Manual* is quite specific as to *how* those names are to printed. You must choose between the following two options: with "Option A" you provide an individual's academic title prior to their name; with "Option B" you provide their degree after their name.

Option A		Option B
Dr. Chris P. Bacon Dr. Adam Baum	**– or –**	Chris P. Bacon, Ph.D. Adam Baum, M.D.

To guarantee consistent signature lines, the LaTeX *Manual* states that you must adopt either Option A for every signature line or adopt Option B for every signature line. In other words, you cannot use Option A for some signature lines and Option B for others. It is strongly recommended that you consult your committee chair as to which option to adopt for your dissertation/thesis. The following sections provide further instructions for the signature lines of your committee chair, other committee members, and the Graduate College Dean.

3.6.2 Committee Chair: \advisor{}

The signature of your committee chair must appear on the title page of your document. With the `\advisor{}` command, UTthesis will generate a signature line for your advisor on the title page and will print her/his name below that line. Examples:

```
\advisor{Dr.~Roy Hinkley}
\advisor{Roy Hinkley, Ph.D.}
\advisor{Roy Hinkley, M.D.}
```

Clarification ..... Only your advisor's name may appear in the `\advisor{}` command, accompanied by either his/her academic title (i.e., "Dr.") or degree (e.g., "Ph.D." or "M.D."). Graduate Faculty requirements prohibit including in this command any *administrative* title, such as director, department chair, associate dean, dean, etc.

Reminder ..... section 2.2 (p. 3) describes the appropriate use of the invisible tilde ("~") character when entering middle initials and academic titles.

Reminder ..... See section 3.6.1 (p. 7) for consistent presentation of signature lines (i.e., reporting academic titles v. degrees).

3.6.3 Commands for Other Committee Members

As mentioned above, the *UT Manual* requires only two signatures to appear on the title page of a dissertation/thesis: your committee chair and the Graduate Dean. However, some students want (or are required by their department/college) to have all other committee members sign the title page. UTthesis provides an easy process for generating such additional signature lines.

Note: The *UT Manual* states that if at least one other committee member signs the title page then every committee member must also sign the title page (i.e., "all or none").

Up to Seven Other Committee Member Signature Lines: In addition to those of your committee chair and the Graduate Dean, UTthesis allows you to generate up to seven additional signature lines. They are generated by using the case-sensitive commands listed in Table 3.2 (p. 9). These commands begin with the "second" committee member because your committee chair is considered to be your "first" committee member.

Recalling the discussion in section 2.2 (p. 3), the silly sample names in Table 3.2 illustrate the appropriate use of the invisible tilde ("~") character when entering middle initials and academic titles. Also see section 3.6.1 (p. 7) regarding consistent presentation of signature lines (i.e., reporting academic titles v. degrees). Note that you must list the names of your other committee members in alphabetic order by their last name (such as they are presented in Table 3.2.

As the following examples indicate, UTthesis will generate only the committee member signature lines that you specify. Depending on the number of desired signature lines, you can use none, some, or all of the commands listed in Table 3.2 (below). The examples that follow discuss the options you have when presenting signatures on your title page. Depending on which option you choose, UTthesis will *automatically* adjust vertical spacing on the title page to reflect the number of signature lines you have specified.

Table 3.2: Optional UThesis commands used to generate title page signature lines for other committee members. These commands are case sensitive and should be used in the order presented here (i.e., \secondmember{}, \thirdmember{}, ... \eighthmember{}).

```
\secondmember{Dr.~Anita Bath}
 \thirdmember{Dr.~Chris P.~Bacon}
\fourthmember{Dr.~Adam Baum}
 \fifthmember{Dr.~Corey O.~Graff}
 \sixthmember{Dr.~Hugh Jass}
\seventhmember{Dr.~Noah Lott}
 \eighthmember{Dr.~Jean Poole}
```

Example 1: If you do not want signatures from other committee members appearing on the title page of your document, then do not include in your LaTeX file the commands listed in Table 3.2.

Example 2: If you have seven other committee members to sign the title page of your document then you would include all seven commands listed in Table 3.2 in your LaTeX file (replacing the silly names in that table with actual committee member names, of course).

Example 3: Suppose your committee was comprised of your committee chair and only two other individuals. In this case, you would include in your LaTeX file only the first two commands listed in Table 3.2 (i.e., \secondmember{} and \thirdmember{}).

$\Longrightarrow$ Recall that the other "committee member" commands begin with the "second" committee member because your committee chair is considered to be your "first" committee member.

Example 4: Suppose you are using the template file "UThesis_Template_(v12).tex" and your committee is comprised of your committee chair and five other individuals. Here you would provide the names of the other five committee members in the first five "committee member" commands included in the template file. These would be \secondmember{} through \sixthmember{}. After that you would delete (or comment out) the remaining "committee member" commands in the template file (i.e., \seventhmember{}) and \eighthmember{}).

Three important issues to remember about these commands:

1) These Commands are for Other Committee Members Only: Do not include the name of your committee chair or the Graduate Dean in the commands listed in Table 3.2. Their signature lines are generated by the \advisor{} and \graduatedean{}{} commands (described in sections 3.6.2 and 3.6.4).

2) Order of Committee Member Signature Commands: You do not have to use the commands in Table 3.2 in the order they are listed in that table. However, UThesis will ignore the order in which these commands are located in your LaTeX file — UThesis will print the signature lines on your title page according to the order of commands listed in Table 3.2.

For example, suppose your \thirdmember{} command is located in your LaTeX file before your \secondmember{} command. UThesis will ignore this ordering and will print on the title page

the information from the \secondmember{} command above that from the \thirdmember{} command.

3) You Can't Duplicate Signature Commands: Each of the commands listed in Table 3.2 can be used only once. If such a command is repeated, only the last entry will be provided on the title page.

For example, suppose you included the command \fourthmember{Dr.~Adam Baum} in your LaTeX file — and later you included the command \fourthmember{Dr.~Dinah Mite}. In this case UThesis would generate a signature line for "Dr. Dinah Mite" on your title page and no signature line would generated for "Dr. Adam Baum." To repeat, each of these commands can be used only once.

3.6.4 Graduate College Dean: \graduatedean{}{}

The signature of Dean of the College of Graduate Studies must appear on your title page. This is accomplished by using the \graduatedean{}{} command. Enter in this command's first set of braces the name of the Graduate College Dean along with her/his academic title (i.e., "Dr.") or degree (e.g., "Ph.D." or "M.D.") — as described in section 3.6.1 (p. 7). Enter in this command's second set of braces the *administrative title* of that dean — which may be "Dean," "Interim Dean," or "Acting Dean." (It's probably "Dean".) Consult the College of Graduate Studies to determine this *administrative title*. For example,

```
\graduatedean{Dr.~Patricia R.~Komuniecki}{Dean}
```

Reminder ..... Dr. Komuniecki is the UT Graduate Dean at the time this document was generated.

Reminder ..... The above example illustrates the appropriate use of the invisible tilde ("~") character when entering a middle initial and an academic title. (See section 2.2, p. 3).

3.7 \maketitle

You **must** include the following standard LaTeX command in your file:

```
\maketitle
```

Location ..... To be brief, bad things will happen if you do not locate the \maketitle command in the appropriate place in your LaTeX file. Please see the template file "UThesis_Template_(v12).tex" for the appropriate location of the \maketitle command.

Order of commands .. LaTeX commands for preliminary pages appearing prior to the table of contents (e.g., abstract, dedication, acknowledgements) must appear after the \maketitle command but before the \tableofcontents command in your LaTeX file.

3.8 Abstract Page

The third page of every document must be an abstract page. With UThesis the only action you have to take to generate the Abstract page is to insert the text of the abstract to your work within the newly created `abstractpage` environment (see the template file "`UThesis_Template_(v12).tex`"):

```
\begin{abstractpage}

     [ Insert the abstract to your work here ]

\end{abstractpage}
```

Significance ..... With this `abstractpage` environment UThesis automatically creates a page heading by using information you've already provided with the commands \title{}, \author{}, \mydocument{}, and \conferraldate{}{}.

Reminder ..... Although the Abstract "page" may exceed a single page, its page-length should be kept to a minimum.

Formatting Issues .... UThesis prints this page's page number in lower-case roman font (as required) and automatically enters its heading in the table of contents.

3.9 Dedication Page

A dedication page is an optional page. If you do not want a dedication page then simply do not include the following commands in your LaTeX file (i.e., delete the the following commands from the template file "`UThesis_Template_(v12).tex`"). If you want to include a dedication page, then insert the text of your dedication within the newly created `dedication` environment described below.

```
\begin{dedication}

     [ Insert the text of your dedication here ]

\end{dedication}
```

Formatting Issues .... UThesis will generate the dedication page and space the material appropriately across the page. A dedication page does not have a page heading and it is not listed in the table of contents. This page is counted in the pagination but the page number is not printed on the page. The Dedication page is not listed in the table of contents and its page number is not printed on the page.

A suggestion ..... When composing your dedication please keep in mind that what may be witty today may not be appreciated or understood 1, 2, ... n years from now. Humor fades and private jokes are soon forgotten. I suggest that you just be sincere when dedicating your document.

3.10 Acknowledgments Page

An acknowledgements page is an optional page. If you do not want an acknowledgements page then simply do not include the following commands in your LaTeX file (i.e., delete them from the template file "`UThesis_Template_(v12).tex`"). If you want an acknowledgements page then insert the text of your acknowledgements within the newly created `acknowledgements` environment:

```
\begin{acknowledgements}
     [ Insert the text of your acknowledgements here ]
\end{acknowledgements}
```

Formatting Issues .... UThesis will automatically generate the acknowledgements page, space the material appropriately across the page, generate the heading for this page and include that heading in the table of contents. It will also print the page number for this page in lower-case roman font (as required).

A suggestion ..... As mentioned previously, when composing your acknowledgements please keep in mind that what may be witty today may not be appreciated or understood 1, 2, ... n years from now. Humor fades and private jokes are soon forgotten. Again, just be sincere with your acknowledgements.

3.11 Table of Contents

All dissertations/theses must include a detailed table of contents. This is accomplished by including the standard LaTeX command:

```
\tableofcontents
```

Formatting Issues .... Page numbers for the table of content pages are automatically printed in lower-case roman font, and its heading is listed in the table of contents.

3.12 List of Tables and List of Figures

The `\listoftables` and `\listoffigures` commands are standard LaTeX commands:

```
\listoftables
\listoffigures
```

Reminder ..... If three or more tables are present in your document then you must include the `\listoftables` command in your LaTeX file (to generate a List of Tables section). The same is true for the `\listoffigures` command (List of Figure) if three or more figures are present in your document. Including such sections is left to the student's discretion if fewer than three tables/figures are present in the document.

Formatting Issues .... Pages numbers in the *List of Tables* and *List of Figures* sections are automatically printed in lower-case roman numerals, and their page headings are included in the table of contents.

3.12.1 Caption text v. text entries in the List of Tables/Figures

As described in section 2.3 (p. 3) and Appendix B (p. 24), the text in an entry to the *List of Tables/List of Figures* does not have to be copied verbatim from the corresponding caption text to that table/figure.

- The caption text to a table/figure must fully describe the content of that table/figure.

  $\Longrightarrow$ Therefore, *caption length should not be influenced by space considerations.* It should be as long as it needs to be.

- The only purpose of an entry in the *List of Tables/List of Figures* is to provide sufficient information about a table/figure to direct readers to the appropriate page where they can examine the table/figure — and review its full caption.

  $\Longrightarrow$ Hence, *space considerations are important when determining the length of an entry in the List of Tables/List of Figures.* That is, its length should be kept to a minimum. It is preferred that entries in the *List of Tables/List of Figures* should not, when possible, exceed one or two lines. (While this is preferred, it is not mandated.)

Appendix B (p. 24) provides a primer on how the `\caption[]{}` command can be used to have a table/figure caption text be different from the corresponding entry in the *List of Tables/Figures.*

Reminder ..... A table's caption appears above the table so its `\caption[]{}` command must be located after the `\begin{table}` command but before the contents of the table. In contrast, a figure's caption appears below the figure so its `\caption[]{}` command must be located after the contents of the figure but before its `\end{figure}` command.

3.12.2 \captionformat{}

You must choose one of two possible formats for captions to tables/figures: the **"align"** option or the **"hang"** option. This choice is made by including one of the following `\captionformat{}` commands in your LaTeX file:

```
\captionformat{align}
```

— or —

```
\captionformat{hang}
```

Formatting Issues .... No input other than "align" or "hang" will be accepted with this command.

Case–sensitive ..... This input is case-sensitive: any misspelling or mixing upper- and lower-case letters will result in the default "hang" option.

The effect from these two options are respectively illustrated in the captions to Tables 3.3 and 3.4 below. Note that the caption to Table 3.3 (directly below) is difficult to distinguish from paragraph text.

Table 3.3: This is the caption to the bogus table below. It was generated using *"align"* option in the \captionformat{} command. Notice that this option results in left- and right-adjustments to the caption's text to "align" with the document's left and right margins.

Question	Answer
Who is the greatest singer to have ever breathed?	Bessie Smith
Who is the greatest piano player to have walked on this planet?	Memphis Slim

Table 3.3's caption above was formatted using the \captionformat{align} option. That option formats the caption's text to *align* with the left and right margins of the document's text. In contrast, the caption to Table 3.4 (below) was formatted using the \captionformat{hang} option, where the caption's text is formatted with a hanging indentation.

Table 3.4: This is the caption to the second bogus table below. It was generated using the *"hang"* option in the \captionformat{} command. This option generates a caption with a hanging indentation to the caption's text.

Question	Answer
Who is the greatest singer to have ever breathed?	Bessie Smith
Who is the greatest piano player to have walked on this planet?	Memphis Slim

Your choice of "align" v. "hang" options in the \captionformat{} command should be based on which option best serves the readers of your dissertation/thesis. In my opinion, the "align" option (Table 3.3) makes it difficult to (a) quickly identify table/figure numbers and (b) differentiate caption text from document text. Table 3.4 shows that these issues are not a concern when using the "hang" option in the \captionformat{} command. That aside, students should consult with their committee chair to determine if discipline-specific conventions dictate the appropriate option.

3.13 List of Abbreviations

This is an optional section. You should consult your committee chair to determine whether you need/want to include this section in your document. If you do not want a List of Abbreviations, simply do not include the following commands in your LaTeX file (i.e., delete them from the template file "UThesis_Template_(v12).tex"). If you want this *List* in your document then use UThesis command "\abbreviation{}{}" to list your abbreviations within the newly created listofabbreviations environment:

```
\begin{listofabbreviations}
   \abbreviation{abbreviation}{brief definition of that abbreviation}
\end{listofabbreviations}
```

You must use the \abbreviation{}{} command in the listofabbreviations environment to guarantee uniform formatting of list entries. The syntax of this command is:

```
\abbreviation{#1}{#2}
```

with "#1" in the above command being the abbreviation and "#2" being the brief definition of that abbreviation. For example, the following commands

```
\begin{listofabbreviations}

   \abbreviation{AER}{American Economic Review; the journal of The American
                      Economic Association}

   \abbreviation{IAR}{I am root}

\end{listofabbreviations}
```

will produce the **List of Abbreviations** and the following entries to that list:

AER ..... American Economic Review; the journal of The American Economic Association
IAR ..... I am root

Please note the following important issues:

Alphabetic order ..... The *LaTeX Manual* states the abbreviations are to be listed in alphabetic order of the abbreviations (not their definitions). This means that the alphabetic order of the abbreviation list is to be determined by the #1 entry in the \abbreviation{#1}{#2} command and *not* by the #2 entry. **This means that you must arrange the \abbreviation{}{} commands in alphabetic order of the abbreviations. You are responsible for making certain that this requirement is satisfied** (i.e., *LaTeX Thesis* cannot do this for you).

Case–sensitive ..... The \abbreviation{}{} command is case-sensitive (variations such as "\Abbreviation{}{}" or "\ABBREVIATION{}{}" are not acceptable).

Formatting Issues ..... If included in your document, *LaTeX Thesis* generates the List of Abbreviations, its page heading, and includes that heading in the table of contents. The list entries are single-spaced (as is required by the *LaTeX Manual*) and page numbers in this section are printed in lower-case roman font.

3.14 List of Symbols

This is an optional section. You should consult your committee chair to determine whether you need/want to include this section in your document. If you do not want a List of Symbols, simply do not include the following commands in your LaTeX file (i.e., delete them from the template file "`UThesis_Template_(v12).tex`"). If you want this *List* in your document then use UThesis command "`\emblem{}{}`" to list your symbols within the newly created `listofsymbols` environment:

```
\begin{listofsymbols}
   \emblem{symbol}{brief definition of that symbol}
      \emblemskip
   \emblem{a different symbol}{brief definition of that different symbol}
\end{listofsymbols}
```

In case you're wondering: the new `\emblem{}{}` command uses "`emblem`" instead of "`symbol`" because "`\symbol{}`" is a reserved LaTeX command. The syntax of the `\emblem{}{}` command is

```
\emblem{#1}{#2}
```

with "#1" being the symbol and the "#2" being the brief definition of that symbol. The UT *Manual* states that a single blank line must separate symbol subgroups (described below). The following command was created to (a) provide such a blank line and (b) maintain uniform formatting:

```
\emblemskip
```

Example LaTeX code for generating a List of Symbols is provided in Table 3.5 (p. 17).

Symbol Subgroups .... **You are responsible for arranging the list of symbols by subgroups according to discipline conventions.** For example,

- non-associated symbols could be listed first (e.g., "‡", "△", etc.)
- Greek characters could be listed second (e.g., "A," "α," "B," "β," "Γ," "γ," "Δ," "δ," etc.
- English alphabet characters could be listed third (e.g., "A," "a," "B," "b," "C," "c," etc.)

Alphabetic order ..... **You are responsible for arranging the list within each subgroup in alphabetic order of symbols and not by their description** (i.e., UThesis cannot do this for you). That is, when appropriate, the alphabetic order within a subgroup is to be determined by the #1 entry in the `\emblem{#1}{#2}` command and *not* by the #2 entry.

Formatting Issues ..... If included in your document, UThesis generates the List of Symbols, its page heading, and includes that heading in the table of contents. The list entries are single-spaced (as is required by the UT *Manual*) and page numbers in this section are printed in lower-case roman font.

Case–sensitive ..... The `\emblem{}{}` and `\emblemskip` commands are case-sensitive (i.e., you cannot mix lower- and uppercase letters with these commands.

Consider the LaTeX code in Table 3.5; it will generate the List of Symbols illustrated below that table.

Table 3.5: Sample LaTeX code for the "listofsymbols" environment. The output generated by this code is illustrated below this table.

```
\begin{listofsymbols}

     \emblem{$\dagger$}{the degree to which the flayrod has gone out of skew
                        on tredel}
       \emblem{$\ddag$}{the ratio of the M2 monetary aggregate to the
                        Monetary Base}

            \emblemskip

        \emblem{$\alpha$}{angle of rotation around internal rotation axis}
         \emblem{$\beta$}{the number of people named ``Bob''}

            \emblemskip

              \emblem{Q}{Tobin's q; the ratio of the market value of
                         installed capital to the replacement cost of
                         capital}
              \emblem{Y}{Gross Domestic Product (adjusted for inflation)}

\end{listofsymbols}
```

The above code will produce the *List of Symbols* below (UThesis would also generate the appropriate page heading). Note the placement of the `\emblemskip` commands in the above code and the corresponding spacing generated in the list below.

† ..... the degree to which the flayrod has gone out of skew on tredel
‡ ..... the ratio of the M2 monetary aggregate to the Monetary Base

α ..... angle of rotation around internal rotation axis
β ..... the number of people named "Bob"

Q ..... Tobin's q; the ratio of the market value of installed capital to the replacement cost of capital
Y ..... Gross Domestic Product (adjusted for inflation)

3.15 Preface Section

This is an optional section. If you do not want a Preface section then do not include the following commands in your LaTeX file (i.e., delete the the following commands from the template file "`UThesis_Template_(v12).tex`"). If you do want a Preface section, insert the text of your Preface within the newly created `preface` environment described below.

```
\begin{preface}

   [ insert the text of your preface here ]

\end{preface}
```

Formatting Issues .... If included in your document, UThesis generates the preface section, its page heading, and includes that heading in the table of contents. Page numbers in this section are printed in lower-case roman font.

3.16 \makebody

The following is a required UThesis command. Please see the discussion below for important information regarding the location of the \makebody command within your LaTeX document.

```
\makebody
```

Section 3.1 – 3.15 describe UThesis commands used to generate the group of pages/sections known as *"preliminary pages"* or *"front matter"* (i.e., your title page through the optional preface section). In your document the front matter is followed by the *"main body"* of text (i.e., your chapters) and then by the *"back matter"* (i.e., references and appendices). The UThesis commands for the *main body* of text and *back matter* are described in section 3.17 – 3.19.

The \makebody command performs a relatively simple, but very important, purpose: it changes the pagination style used in the *front matter* to the style which must be used in the *main body* of text and *back matter*. Hence, the location of the \makebody command in your document is very, very important. To be specific, the *UT Manual* requires page numbers for the *front matter* to be printed in lowercase roman numerals (i.e., i, ii, iii, ...) while page numbers for the *main body* and "back matter" are to be printed in arabic numerals (i.e., 1, 2, 3, ...). UThesis will control for this change through the \makebody command.

Location ..... Please note two other *UT Manual* requirements: a) the page number of the first page of the *main body* must be reset to "1," and b) the first page of the *main body* is the first page of your first chapter. **This means that within your LaTeX document your must locate the \makebody command immediately before your first \chapter{} command.**

The template file "UThesis_Template_(v12).tex" illustrates the appropriate location for this command in your LaTeX document.

3.17 Chapter contents

I assume you're familiar with sectional commands such as \chapter{}, \section{}, \subsection{}, \subsubsection{}, \paragraph, etc. If you have questions on such issues, please see Leslie Lamport's *LaTeX: A Document Preparation System*, Addison-Wesley: Reading, Massachusetts, 1985.

3.18 \myreferences

The UT *Manual* requires the heading "References" be used for the section that lists the works cited in your dissertation/thesis (e.g., it cannot have the heading "Bibliography"). Further, unlike those for chapters and appendices, the UT *Manual* also requires that this section heading not be numbered. As described below, the *UThesis* command `\myreferences` will take care of both of these issues for you. It will also automatically list its (unnumbered) heading in the table of contents and print this section's page numbers in arabic numerals.

LaTeX users have two options for establishing an acceptable reference section: A) manually generating the list of works cited in your dissertation/thesis (i.e., your "reference list"), or B) using BibTeX to generate that reference list.

Option A: Generating Your Reference List Manually

If you manually generate your reference list, first use the following *UThesis* command to generate a "References" section:

```
\myreferences
```

Following that command, use the *UThesis* environment below to list the works cited in your dissertation/thesis:

```
\begin{referencelist}{<option>}
\item ...
\item ...
\end{referencelist}
```

The UT *Manual* states that you must use double-spacing *between* individual entries in your reference list. However, individual entries within that list may be either single- or double-spaced. *UThesis* therefore provides two options for the above "`referencelist`" environment:

"`single`" Replacing "<`option`>" in the above `referencelist` environment with the text "`single`" will generate a reference list with single-spaced entries in that list but double-spacing between those entries. (This option is sometimes preferred when the reference list is especially long.) An example of a reference list generated by this option is provided in the template file "`UThesis_Template_(v12).tex`".

"`double`" Alternatively, replacing "<`option`>" in the above `referencelist` environment with the text "`double`" will generate a list with double-spaced entries and double-spacing between entries. (This option is sometimes preferred when the reference list is relatively short.) An example of a reference list generated by this option is also provided in the template file "`UThesis_Template_(v12).tex`".

The "`single`" and "`double`" options are case sensitive: any misspelling or mixing upper- and lower-case letters results in the default "`double`" option.

Option B: Using BibTeX to Generate Your Reference List

If you choose to use BibTeX to generate your reference list I must presume you're quite knowledgeable about the BibTeX process. In this case you cannot include in your document either the "`\myreferences`" command or the "`referencelist`" environment discussed above. To be specific, you must:

(a) delete the `\myreferences` command and the two examples of the "`referencelist`" environment provided in the template file "`UThesis_Template_(v12).tex`";
(b) add and locate appropriately all necessary BibTeX commands within your document (e.g., `\bibliographystyle{}`, `\citationstyle{}`, `\bibliography{}`, etc.)

UThesis altered BibTeX code in two ways. First, the section heading is now defined to be "References" (as mandated by the *UT Manual*). Second, code was added so that the BibTeX process automatically includes the (unnumbered) heading "References" in the table of contents.

Citation Style

The discussion above describes the *heading* to your reference section and the spacing issues concerning your reference list. The *UT Manual* does not dictate the style by which individual entries are reported in your reference list (i.e., the examples in the template file "`UThesis_Template_(v12).tex`" may not be appropriate for all disciplines). The style you use to report such reference list entries must be based on the convention adopted by your particular discipline.

3.19 \appendix

The `\appendix` command is a standard LaTeX command. The template file included in this distribution provides examples on how to establish appendices. (See "`UThesis_Template_(v12).tex`".) To be brief, first include the command

```
\appendix
```

followed by the command

```
\chapter{This is an Appendix}
```

That will generate the section enumeration "Appendix A" followed by the heading "This is an Appendix". The appendix enumeration and heading use the same font as that used for chapters within the body of the text (as is required by the *UT Manual*).

You need to invoke the `\appendix` command only once. That is, if you need another appendix (i.e., "Appendix B") you should not include another `\appendix` command — simply add a subsequent `\chapter{}` command to generate a subsequent appendix.

Appendices are enumerated using the *Alph* numbering style (i.e., A, B, C, ...) instead of the arabic style used for chapters (i.e., 1, 2, 3, ...). Appendix page numbers are printed in arabic font, and the heading to each appendix is listed in the table of contents. All of these formatting issues are automatically handled by *UThesis*.

3.20 The end

And, of course, the last command in your document is the standard LaTeX command:

```
\end{document}
```

Appendices

Since creating *UThesis* in 1995, many graduate students have contacted me for guidance on LaTeX's cross-referencing capabilities and about its \caption[]{} command. The appendices provide a detailed explanation of each feature. For a complete description of each feature please see Leslie Lamport's *LaTeX: A Document Preparation System*, Addison-Wesley: Reading, Massachusetts, 1985.

Appendix A

Review of LaTeX's Cross-Referencing Commands

A.1 Section Numbers

There are two LaTeX commands necessary for cross referencing: the `\label{key}` command and the `\ref{key}` command. To cross-reference a section, the first step is to place a `\label{key}` command *within* the `\section{}`, `\subsection{}`, `\subsubsection{}`, etc. command. That is,

```
\subsection{ \label{} }
```

For example, I used the following LaTeX code to generate the subsection heading above:

```
\subsection{Section Numbers\label{SECTIONS}}
```

The string "`SECTIONS`" is the "`key`" in the above example. You use the `\ref{key}` command to reference a particular "`key`". For example, entering the LaTeX code "`\ref{SECTIONS}`" in this LaTeX document produces the output "A.1" — which is this section's number. Hurrah! It works!

The above description for the use of the `\label{}` and `\ref{}` commands hold true for all section levels: chapter, appendix, section, subsection, subsubsection, etc.

A Style Issue: You may make statements such as *"...this information is in A.1."* However, you're more likely to state something like *"...this information is in section A.1."* Therefore, as a matter of style, you might consider using the invisible "`~`" (tilde) character between the "`section`" and "`\ref{SECTIONS}`" elements of that LaTeX code. That is,

```
section~\ref{SECTIONS}
```

Using the invisible "`~`" (tilde) character in this way provides a very clear benefit: it improves the readability of your document. It "ties" the two elements together so that

1. no additional space is inserted between these elements, and
2. no line break will occur between these elements.

A.2 Table and Figure Numbers

Cross referencing a table or figure number uses the same LaTeX commands as those with sections, except that the `\label{}` command must instead be inserted within the braces ("{ }") of the table's/figure's `\caption{}` command. That is,

```
\caption{ \label{} }
```

You must use a `\caption{}` command for each table/figure so that each table/figure number and caption will be included in the "*List of Tables*" or "*List of Figures*". Consider Table A.6 below.

Table A.6: A Silly Glossary for Research Reports

When Professors write...	**they REALLY mean ...**
Typical results are shown ...	The best results are shown ...
It is generally believed that ...	A couple of other guys think so too
Thanks to Al K. Seltzer for assistance and to I.P. Daly for valuable discussions	Seltzer did the work and Daly explained what it meant

I used the following LaTeX code to generate the caption to Table A.6 above:

```
\caption{A Silly Glossary for Research Reports \label{SILLY}}
```

A table or figure is referenced by using the "`\ref{key}`" command, which was described in section A.1. With "`SILLY`" as the "`key`" in the above `\label{}` command, entering the LaTeX code "`Table~\ref{SILLY}`" in this document produces the output "Table A.6".

A.3 Equation Numbers

Suppose you have the following equation in your dissertation/thesis:

$$c^2 = a^2 + b^2. \tag{1}$$

Equation (1) was generated by the following commands:

```
\begin{equation}
c^2 = a^2 + b^2. \label{DELUXE}
\end{equation}
```

The LaTeX code: "`Equation~(\ref{DELUXE}) is a deluxe equation`" would generate the output "Equation (1) is a deluxe equation". Notice that for the output to generate "Equation (1)" I had to manually surround `\ref{DELUXE}` with "(" and ")". You should consult your major advisor as to whether your discipline's convention is to reference equations as "Equation (1)" or as "Equation 1".

Take care when placing the `\label{}` command in multiple equation environments such as `eqnarray` or `array`. For example, consider the following equations:

$$2 = 1+1, \tag{2}$$
$$4 = 2+2. \tag{3}$$

Equations (2) and (3) were generated with the following LaTeX code:

```
\begin{eqnarray}
 2 & = & 1 + 1, \label{CORRECT}  \\ \label{INCORRECT}
 4 & = & 2 + 2. \label{PROPER}
\end{eqnarray}
```

The proper placement of a `\label{}` command in such an environment is after the right-hand contents of an equation but before the line break command "`\\`". Compare the placement of the `\label{CORRECT}` and `\label{INCORRECT}` commands relative to the "`\\`" command in the above LaTeX code. Placing the `\label{}` command after the line break will, of course, cause that `\label{}` command to reference the subsequent line.

The following list illustrates the effect of each `\label{}` command in the above LaTeX code. As you can see, the commands `\label{CORRECT}` and `\label{PROPER}` are placed properly for referencing equations (2) and (3). However, the location of the `\label{INCORRECT}` command causes it to reference equation (3) — not equation (2). If that's not what is intended, then simply place the `\label{INCORRECT}` command before the corresponding "`\\`" command (i.e., where the `\label{CORRECT}` command is located).

LaTeX Code	Output
`Equation~(\ref{CORRECT})`	Equation (2)
`Equation~(\ref{INCORRECT})`	Equation (3)
`Equation~(\ref{PROPER})`	Equation (3)

A.4 Page Numbers

The `\pageref{key}` command is used to reference a particular page number. The "`key`" in this command is from a `\label{key}` command placed somewhere in the text of the page you want to reference. For example, in the LaTeX file for this document I placed the "`\label{FUDD}`" command at the end of this very sentence — right here: $\Longrightarrow\Longleftarrow$. In turn, the command "`p.~\pageref{FUDD}`" produces the output "p. 23" — which is the page number of this page. It works! Hurrah!

A convenient LaTeX feature is that you do not always have to include additional `\label{}` commands for some page referencing. You can use a "`key`" from an existing `\label{}` command that is already in place (on that page) which references something else, such as a section, table, figure, equation, etc. Consider the following examples, which draw upon "`keys`" used in previously examples. Note that for each example, the same "`key`" is used in both the "`\ref{}`" and "`\pageref{}`" commands.

LaTeX Code	Output
`section~\ref{SECTIONS} on p.~\pageref{DELUXE}`	section A.1 on p. 21
`Equation~(\ref{DELUXE}) is on p.~\pageref{DELUXE}`	Equation (1) is on p. 22
`Table~\ref{SILLY} (p.~\pageref{SILLY}) is not funny`	Table A.6 (p. 22) is not funny

Appendix B

Review of LaTeX's \caption[]{} Command

B.1 Placement of the \caption[]{} command

It is important to remember that the caption of a table appears above the table while the caption of a figure appears below the figure. See Table A.6 (p. 22) and Figure B–1 (p. 24) for illustrations of the proper location of captions.

B.2 Caption text v. the text entry in the List of Tables/List of Figures

Every semester a problem resurfaces regarding the formatting of table/figure captions. Many students and faculty members do not know whether a table's/figure's caption text must be copied verbatim as the text in the corresponding entry in the *List of Tables/List of Figures*. It does not have to be a verbatim copy of the caption text.

Because the purpose of a caption is to fully describe the content of a table/figure, *caption length should not be influenced by space considerations.* In contrast, the purpose of an entry in the *List of Tables/Figures* is to provide concise information about a table/figure that directs readers to the appropriate page where they can examine the table/figure and review its full caption. *Hence, space considerations are important when determining the length of an entry in the List of Tables/Figures* (i.e., such an entry should not exceed one or two lines in such *Lists*). Entries of greater length makes such *Lists* cumbersome and, most importantly, makes it difficult for readers to locate information within those *Lists*. This is especially true when the *List* has many multiple-line entries.

LaTeX provides an optional argument in the `\caption` command so that your caption text can differ from the *List of Tables/List of Figures* entry text (i.e., the "list-entry" text). The complete syntax of the `\caption` command is:

```
\caption[list-text]{caption-text}
```

`{caption-text}` ..... **Mandatory.** The "`caption-text`" will appear as the actual caption to the table/figure.

`[list-text]` ..... **Optional.** If included, the "`list-text`" will be the corresponding text entry in the *List of Tables/List of Figure*. The "`list-text`" may differ from the "`caption-text`" and it will not appear in the caption to the table/figure. If the `[list-text]` option is omitted, the "`caption-text`" will be the corresponding entry in the *List of Tables/List of Figure*.

B.2.1 Relatively "short" captions

Consider Figure B–1 below. Because the length of its caption text is relatively "short" there is no need to use the `[list-text]` option of the `\caption[]{}` command.

Pretend a picture of Bessie Smith was inserted here

Figure B–1: Bessie Smith, Empress of the Blues.

I used the following LaTeX code to generate the caption to Figure B–1 above:

```
\caption{Bessie Smith, Empress of the Blues.}
```

By using the "`\caption{caption-text}`" command (i.e., omitting the "`[list-text]`" option), then the text provided as "`caption-text`" will appear as the caption to the table/figure **and** as the entry to the *List of Tables/List of Figures*. You can verify that the above caption text is the same as Figure B–1's entry in this document's List of Figures (p. iii).

B.2.2 Relatively "long" captions

The length of the caption text to Figure B–2 is appropriate for a caption to a table/figure. (Again, the length of a caption should not be influenced by space considerations.) However, most would consider it "too long" to be included as an entry in the *List of Tables/List of Figures* — because it is preferred that such entries do not exceed one or two lines in such *Lists*.

Figure B–2: A picture of Memphis Slim. Wikipedia states that "Memphis Slim (born John Len Chatman, September 3, 1915 – February 24, 1988) was an American blues pianist, singer, and composer." In my opinion, Memphis Slim was the greatest piano player to have set foot on this planet.

The following LaTeX code was used to generate the caption to Figure B–2 above. Note that for this figure I used the "`[list-text]`" option of the `\caption[list-text]{caption-text}` command.

```
\caption[Memphis Slim, the greatest piano player to have walked on this planet.]
        {A picture of Memphis Slim.  Wikipedia states that ``Memphis Slim (born
        John Len Chatman, September 3, 1915 -- February 24, 1988) was an
        American blues pianist, singer, and composer.'' In my opinion, Memphis
        Slim was the greatest piano player to have set foot on this planet.}
```

Please note four items about the above `\caption[list-text]{caption-text}` command. First, the "`[list-text]`" portion of the above command was "`[Memphis Slim, the greatest piano player to have walked on this planet.]`" Second, you can verify that this is the text entry for Figure B–2 in this document's List of Figures (p. iii). Third, notice that the "`list-text`" does not appear in the actual caption to Figure B–2 above. Fourth, the {`caption-text`} portion of the above command contains the actual caption to Figure B–2: "`{A picture of Memphis Slim. Wikipedia states ...to have set foot on this planet.}`"

While the "`list-text`" option is a handy tool, it must be used judiciously. *The above discussion is meant as a guide — not a commandment.* There may be situations when a *List of Tables/Figures* entry must span multiple lines: it depends on the content of the caption text and to the extent you are able to adequately summarize the caption text in a concise form.

Examples of table captions in this document that use the "`list-text`" option to differentiate caption text from its corresponding entry in the *List of Tables* are: Table 3.2 (p. 9), Table 3.3 (p. 14), and Table 3.4 (p. 14). Please compare their caption text to the corresponding entries in the List of Tables (p. iii).