Typing Your University of Georgia Thesis With LaTeX: Frequently Asked Questions

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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.

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   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).

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.

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.

6 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.

7 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.

8 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.

9 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.

10 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.

11   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).

12   What is `uga.sty`?

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

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

Download it from *ftp://ftp.ai.uga.edu/pub/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 `ugasample.tex` along with it.

14   Where is the documentation for `uga.sty`?

You're looking at part of it. The rest is in the files `uga.sty` and `ugasample.tex`. You can and must read these files with your text editor.

15 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.

16 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.

17 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.

18 Why is my paper size wrong?

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 outside the United States. 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 better yet, obtain a corrected `config.ps` from the Artificial Intelligence Center at:

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

You can view `config.ps` with a text editor to see further information about it.

19 How do I type a percent sign?

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

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

This character often occurs in web addresses. You will quickly discover that 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 "`$\sim$`".

21   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'.

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

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

23   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.

24   What is the `verbatim` environment used for?

Computer programs, as just demonstrated.

25 What is **sans-serif type** used for?

Almost nothing except labels within illustrations.

26 How do I type the bibliography?

See Lamport's book. 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.

27 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 `ugasample.tex`.

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

28 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`.

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

LaTeX assumes that every period marks the end of a sentence, so it leaves extra space after it. You should 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.

Alternatively, right after `\begin{document}` you can issue the command

```
\frenchspacing
```

in order to turn off the extra space after periods. "French" spacing is perfectly acceptable in an American thesis.

30   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.

31   What is an overfull hbox?

See previous question.

32   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, put the `\raggedright` command after `\begin{thebibliography}` or `\begin{chapterbibliography}` as the case may be. It will then affect only the bibliography.

33   How do I put a picture into my thesis?

Here's the 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.

34 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.