

The Quickstart Guide to Preparing Your USM Thesis with L^AT_EX

Lim Lian Tze (Ph.D.)

liantze@gmail.com

<http://liantze.penguinattack.org>

September 18, 2015

Contents

0	Before We Start	2
1	Setting Up	2
2	Using the templates	3
2.1	Class Options	3
2.1.1	Body font	3
2.1.2	URL font	4
2.1.3	Framed figures	4
2.2	Using Class Options	4
2.3	Providing details about your thesis	4
2.4	Acknowledgements and Abstracts	5
2.5	List of Acronyms and Symbols	5
2.6	Main Chapters	5
2.7	Appendices	5
2.8	Bibliographies and Citations	6
2.9	List of Own Publications	6
2.10	Graphic File Formats	6
3	Compiling your thesis	6
3.1	Command Line Interface	7
3.2	Using TeXnicCenter	7
3.3	Using TexMaker	8
3.4	Note for Windows Adobe Reader Users	9

0 Before We Start

This guide assumes that you already have a working \LaTeX distribution on your machine. Most *nix systems will already have one installed, typically \TeX Live. Both emacs and vi have plugins to work with \LaTeX files. If you prefer something more GUI-ish, try TexMaker or Kile. \TeX works is very barebones, but is straightforward, unconfusing, and does the work very nicely.

For Windows users, get MiK \TeX . You can use \TeX works, \TeX nicCenter, \TeX studio or others as editors – these are all open source and free-of-charge.

For Mac Users, if you have the bandwidth, you can get Mac \TeX . However this is a *huge* download, and I personally install Basic \TeX instead, then use the \TeX Live Utility to install additional packages that I need.

\LaTeX and \TeX are open source software, and all software mentioned above are available free-of-charge. Installation is quite straightforward, but if you want, step-by-step instructions for pro \TeX t are available at <http://liantze.googlepages.com/latextypesetting>.

There are also a number of online \LaTeX authoring platforms, such as Overleaf, ShareLa \TeX , Authorea, etc. The `usmthesis` templates have been tested and found to work fine on Overleaf and ShareLa \TeX . (Full disclaimer: I'm one of the Community \TeX pert at Overleaf.com.)

1 Setting Up

Unzip the contents of `usmthesis.zip` into some directory of your choice. Note that *all* files (except the `.pdf` and `.dvi` files since they will be generated from the source files anyway) should ideally reside in the same directory, although you can configure it otherwise as you get more comfortable with \LaTeX .

The best way to approach this is to treat your thesis as a programming project. Store the `.tex` files in a “source” folder, and obtain the output DVI or PDF files by processing the `.tex` files with \LaTeX or `pdf \LaTeX` . If you're familiar with git or any other version control tools, do use them to maintain your \LaTeX ed project.

You should have the following files after unzipping:

usmthesis.dvi The sample thesis DVI output from \LaTeX .

usmthesis.pdf The sample thesis PDF output from `PDF \LaTeX` .

usmthesis.cls The `USMthesis document class` file which contains most of the format specifications and configurations, conforming to the requirements set out in the thesis preparation guide issued by IPS.

usmthesis.tex The “main driver” file. Think of this as the equivalent of `int main()` or `public static void main(String [])`.

mybib.bib The bibliography database file. You can either edit this file in a plain text editor, or use a `BIB \TeX` editor such as JabRef¹.

¹<http://jabref.sourceforge.net>

acknowledgements.tex File containing the acknowledgements.

abs-mal.tex File containing the Malay abstract.

abs-eng.tex File containing the English abstract.

loa.tex (Optional) Contains the lists of abbreviations and symbols.

mainchaps.tex Listing of files containing the main chapters.

appendices.tex (Optional) Listing of files containing the appendices.

chap-*.tex The main chapters, one in each file.

app-*.tex The appendices, one in each file.

***.eps, *.pdf, *.png, *.jpg** Any graphic files that need to be included. See section 3.1 in the sample `usmthesis.pdf` on how this can be done.

There is no need for creating separate files for the cover page, table of contents, and list of figures and tables. These will be automatically generated when you run \LaTeX (or $\pdf\LaTeX$) on the input files.

If you are using *TeXnicCenter*, it's best to create a project file for your thesis. Open up `usmthesis.tex`, then select **Project** → **Create with active file as main menu** from the menu bar. Make sure that you select the **Uses BibTeX** option, and **en** as the language.

2 Using the templates

The bundled `*.tex` files are meant as template files which you modify or replace to suit your own needs: *they hold the actual contents of your own thesis*. Let's see how to do this, step by step.

You may also want to browse through the bundled `usmthesis.pdf` and `*.tex` files. They contain some \LaTeX tips and examples, as well as links to free online tutorials and resources.

2.1 Class Options

`usmthesis.cls` defines the various layout and formatting as according to IPS' guidelines. Therefore, under normal circumstances, there should be no need for fiddling with the formatting: simply concentrate on writing the thesis chapters.

Nevertheless, there *are* some (minor) class options that you can set:

2.1.1 Body font (default: `times`)

IPS has allowed either Times (12pt) or Arial (11pt) to be used as the thesis' body font. Available options are:

- `times` to use a serif or roman font (Times) as body font;
- `arial` to use a sans serif font (Helvetica, a look-alike for Arial) as body font.

The default is `times`.

2.1.2 URL font (default: `urltt`)

URLs should be typeset with a `\url` command like this, to take care of special characters and proper line-breaking of long URLs:

```
\url{http://www.cs.usm.my}
```

You may select a font style for URLs, so that they stand out from the main body font selected. Available options are:

- `urlrm` to use a serif or roman font (Times): `http://www.cs.usm.my`
- `urlsf` to use a sans serif font (Helvetica): `http://www.cs.usm.my`
- `urltt` to use a typewriter font (TX Typewriter): `http://www.cs.usm.my`

The default is `urltt`.

2.1.3 Framed figures (default: `noboxfig`)

Some people may prefer to have a frame around their figures; others don't. You may specify your preference with the following class options:

- `boxfig` to put full-width boxes around all your figures;
- `noboxfig` to have figures *without* frames.

The default is `noboxfig`.

2.2 Using Class Options

Specify the above class options like this:

```
\documentclass[times,urltt]{usmthesis}
```

This would typeset your thesis using serif font (Times) as the main font, teletype for URLs and no boxes around your figures (by default). You may give any combinations of these options, in any order, like so: `\documentclass[urlsf,boxfig]{usmthesis}`.

2.3 Providing details about your thesis

Telling the world who you are, and what your research thesis is about, is a good place to start. Open up `usmthesis.tex` (your "main" file) and look for the line

```
%% Enter particulars about your thesis HERE
```

Now on the lines that follow, replace the default text between the curly braces:

```

\author{Your Name e.g. Ace Student}
\title{Your Thesis Title in English e.g. Doing Research}
\titlems{Your Thesis Title in Malay e.g. Kerja Penyelidikan}
\submityear{Year Submitted e.g. 2006}
\submitmonth{Month Submitted e.g. August}
\degreetype{Degree Type e.g. Doctor of Philosophy}

```

2.4 Acknowledgements and Abstracts

Open up `acknowledgements.tex`, `abs-mal.tex` and `abs-eng.tex`, and replace the default text there with your own material. The titles for your English and Malay abstracts will be inserted automatically during the “compilation” phase later.

2.5 List of Acronyms and Symbols

If you don’t have any list of acronyms or symbols, open `usmthesis.tex` and comment out the line that includes the `loa.tex` file. This is done by adding a percentage sign (%) in front of the line, like this:

```
%\include{loa}
```

If you *do* need such a list, open up `loa.tex`. It contains a *List of Abbreviations* as well as a *List of Symbols*. You may delete off one or the other if you don’t need either of them.

You can list down abbreviations and symbols that are used in your thesis following the examples there. Also, specify the longest acronym in your list in the square brackets: `\begin{acronym}[HERE]`. This will align your list nicely.

For more information, see the documentation of the acronym package in `$TEXMF$/doc/latex/acronym/acronym.pdf` or `acronym.dvi`, where `$TEXMF$` is the directory containing your \LaTeX installaion. (If you use \TeX , you can just type `texdoc acronym` at the shell prompt and the documentation file will be displayed automatically – if it’s found on your machine. Likewise, if you use \MikTeX on Windows, type `mthelp acronym`.)

2.6 Main Chapters

I recommend that you have a separate file for each individual chapter. Each file should start off with the chapter title, so `chap-review.tex` might start with:

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

Next, in `mainchaps.tex`, list down the *file names* of your main chapter files. Notice that you may omit the `.tex` suffix when doing so.

2.7 Appendices

This goes pretty much the same way as the main chapters, but you specify the files containing your appendix material in `appendices.tex` instead.

If you do not have any appendix to include, you may comment out the lines starting with `\appendix`, right up until after `\input{appendices}`, which are near the end of `usmthesis.tex`.

2.8 Bibliographies and Citations

You can either create your bibliography database file `mybib.bib` by hand or with the help of JabRef (<http://jabref.sourceforge.net>) or other BibTeX management software.

For more information on how to do citations *inside* the main text, see Chapter 2 in the sample `usmthesis.pdf` for a brief overview, including how to select an author-year or numbers only citation system. (Author-year is the default in the sample files.)

2.9 List of Own Publications

First, make sure that you enter details about your own publications in `mybib.bib`. Then in `usmthesis.tex`, search for the following line:

```
\nociteown{lim:2005}
```

Replace the BibTeX key between the curly braces with that of your own publication. If you have more than one publications, simply separate them with commas inside the curly braces, like this:

```
\nociteown{lim:tang:2004,lim:2005}
```

If you don't have a list of own publications, comment out both these lines like this:

```
%\nociteown{lim:2005}  
...  
%\bibliographyown{mybib}
```

2.10 Graphic File Formats

See `usmthesis.pdf` section 3.1 on the steps to include graphics in your thesis. This section is just a short note on the format of the graphic files.

You would most probably be running `latex` to generate a DVI file, or `pdflatex` to generate a PDF file straight off. If you are running `latex`, you *must* use EPS graphic files. If you are running `pdflatex`, then you *must* use PNG, JPG or PDF graphic files.²

Also, make sure that your PNG files do not contain transparent pixels. They might show up gray or black in the PDF output on some systems.

3 Compiling your thesis

After writing your thesis, you need to generate the output. While there are many interfaces to facilitate this, we describe only two of them here: using a command line interface (shell or DOS prompt) and TeXnicCenter.

²The documentations claim that GIF files are supported too, but I have never got them to work.

3.1 Command Line Interface

Issue the following commands at a command prompt:

1. `> pdflatex usmthesis`

This will generate most of the document body.

2. `> bibtex usmthesis`

This will process the bibliography entries.

3. `> bibtex own`

This will process the list of own publications if there is one. Skip this step if you don't have a list of own publications.

4. `> pdflatex usmthesis`

at least twice more, until everything's fine, i.e. no more error or warning errors. Ignore warnings about no hyphenations loaded for bahasa or about french-ldf.

The second run of `pdflatex` will generate the table of contents and bibliographic entries, but the citations will only be included on the third run of `pdflatex`. Sometimes a fourth (or even fifth!) run of `pdflatex` is required to get all references and citations generated correctly.

The above steps will produce `usmthesis.pdf`. You can then use a PDF viewer to inspect the file, though Windows users should read section 3.4.

You might see many warning messages from the `hyperref` package; in most cases you can ignore them. If your PDF output looks fine to you, all is well.

3.2 Using TeXnicCenter

If you have a List of Own Publications, it's best that you modify or create a new "output profile" in TeXnicCenter first. The steps below, together with Figure 1, demonstrate how to create new output profiles to process your list of own publications automatically.

1. From the menu bar, select **Build** >> **Define Output Profiles...**
2. Select **LaTeX => PDF** in the left pane.
3. Click the **Copy** button, and give the new profile a name, such as **LaTeX => PDF (USM thesis)**.
4. Make sure your new profile is highlighted in the left pane. Now on the right pane, click on the **Postprocessor** tab.
5. Create a new postprocessor, with a name like "Process List of Own Publications".

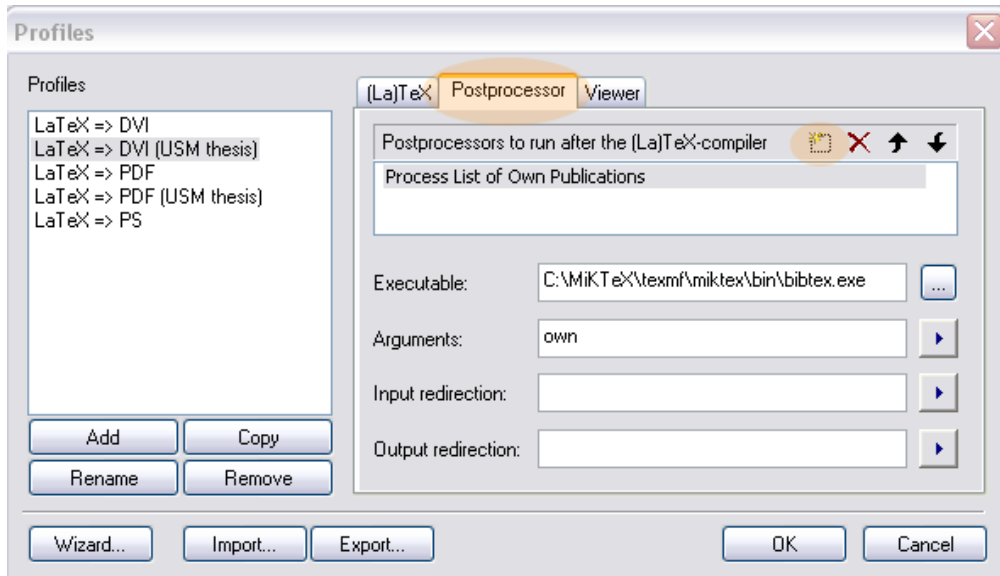


Figure 1: Adding a new postprocessor in TeXnicCenter

6. For **Executable**, browse and navigate to where the `bibtex.exe` executable is located and select it. It should be in some place like
`C:\textmf\miktex\bin` or `C:\Program Files\MiKTeX 2.9\textmf\miktex\bin` on a Windows MiKTeX installation.
7. Enter `own` for **Argument**.

To generate a PDF file, activate the `LaTeX => PDF (USM thesis)` profile, and hit **F7**. Hit it a few more times, until the number of warnings doesn't change anymore. You can then use a PDF viewer to inspect the generated file, though Windows users should read section 3.4 first.

3.3 Using TeXMaker

Most of this is similar to the above, but here's a few things you should know when using TeXmaker.

1. Open `usmthesis.tex` in TeXmaker. Then from the menu, choose **Options >> Define current document as 'Master document'**.
2. Edit `chap-intro.tex` etc. (If you need to add your own `chap-xxx.tex`, make sure you include its filename in `chapters.tex` or `appendix.tex` respectively).
3. If you want to produce the List of Own Publications, you will need to select from the menu **User >> User Commands >> Edit User Commands**, to create a new item. You may need

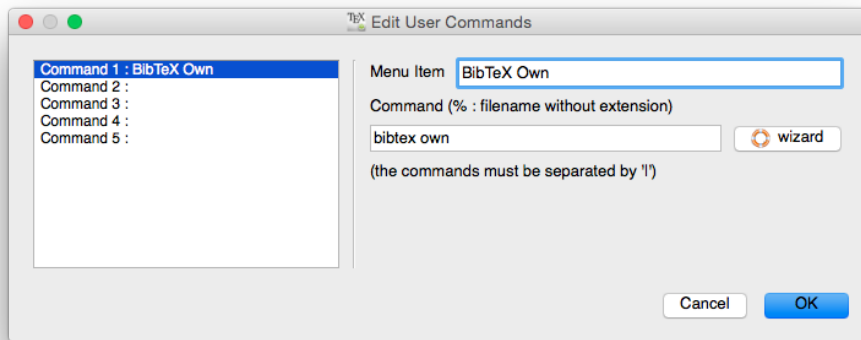


Figure 2: Adding a new user command in TeXMaker

to refer to `Preferences >> Configure TeXmaker` to check the exact file path to `bibtex.exe` on your machine.

You can then execute this command from `Users >> User Commands >> 1: BibTeX Own`. After that you will need to run `pdflatex` a few more times to see your List of Publications appear in the PDF.

4. Use the `pdfLaTeX/View PDF`, or `Quick-build` button to run and then preview your document.

3.4 Note for Windows Adobe Reader Users

If you're using an older version of Adobe Reader (7.x and earlier) you may notice that if a PDF file is already open in Acrobat Reader (or Acrobat Professional), attempts to re-compile it will fail. This is because Reader *locks* the file, so that you need to close the PDF in Reader before re-compilation. The easiest way to solve this is to upgrade to the latest version of Adobe Reader. (It's free anyway).

If, after upgrading, TeXnicCenter complains it can't find Adobe Reader, you may need to re-specify the path to your Reader .exe under `Build >> Define Output Profile...`, and check under `LaTeX ==> PDF >> Viewer >> Path of executable`.