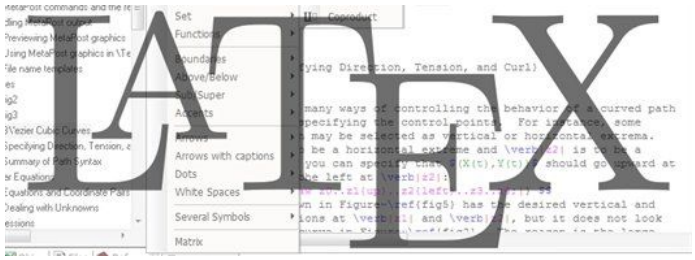
LaTeX Lab:
The MIT Thesis Template

2.680 Unmanned Marine Vehicle Autonomy, Sensing, and Communications



Spring 2017

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1 Overview and Objectives

This lab provides an introduction to using the MIT thesis template.

1.1 Objectives

When finished with this lab, you will have completed the following objectives:

- modify a series of LaTeX documents constituting the MIT thesis format using lessons from previous labs.

1.2 Deliverables

You will complete the following deliverables at the completion of this lab:

1. produce a LaTeX-based document using the provided templates and references.

1.3 What you will need to get started

You will need a machine that has:

- Emacs as a text editor.
- The `pdflatex` compiler installed. In this lab, we assume the compiler is the executable `pdflatex`.

2 Basic LaTeX References

This section is provided for your easy of reference only. You may proceed to the next section.

2.1 Online Documentation

Some basics for LaTeX documents maybe found at the following links:

1. https://en.wikibooks.org/wiki/LaTeX/
2. http://latex.wikia.com/wiki/Main_Page
3. https://www.sharelatex.com/

Additionally, you may find the following book helpful for more advanced concepts:

- *Tex Unbound: Latex & Tex Strategies for Fonts, Graphics, & More: LaTex and TeX Strategies for Fonts, Graphics, and More* by Alan Hoenig (1998-01-01); Publisher: Oxford University Press USA; ASIN: B01K0SZJOS.

2.2 Additional Documentation

Some additional references that are recommended are found below.

LaTeX Quick Reference http://oceanai.mit.edu/k_w/latex_lab/refs/latex.pdf

LaTeX Cheat Sheet http://oceanai.mit.edu/k_w/latex_lab/refs/latexsheet.pdf

Auctex Reference Card http://oceanai.mit.edu/k_w/latex_lab/refs/auctex.pdf

Auctex Manual https://www.gnu.org/s/auctex/manual/auctex.pdf

2.3 Creating a Basic LaTeX Document

Complete the following steps to create, edit, compile, and open a basic LaTeX document.

1. create a new file (myfile.tex) using emacs
2. edit the file and insert the basic LaTeX document structure. Save the file frequently.
   Listing 1: LaTeX File Structure.

```
0 \documentclass[onecolumn,letterpaper,11pt]{article}
1  % Insert any packages, environments, counters, etc. here
2  \begin{document}
3  % Insert your document contents here
4  Hello world!
5  \end{document}
```

3. compile the LaTeX document (command line sequence, makefile, then using Auctex shortcuts)

(a) compile from the console using a file named myfile.tex

```
$$ pdflatex myfile; pdflatex myfile
```

(b) compile and open from the console for a makefile named "makefile"

```
$$ make pdfo
```

Listing 2: Example LaTex makefile (named "makefile").

```
.SILENT:

.PHONY : all clean

LATEX     = pdflatex
PAPER     = myfile  #name of main file without ``.tex''

main: $(PNGFILES)
        $(LATEX) $(PAPER)
        bibtex $(PAPER)  # if using a bibliography
        $(LATEX) $(PAPER)

pdfo: main  # opens paper after compiling
        open $(PAPER).pdf &

pdfoq:      # opens paper after single compile
        $(LATEX) $(PAPER)
        open $(PAPER).pdf &

pdfv:       # only opens paper
        open $(PAPER).pdf &

clean:      # cleans files made while compiling
        rm -f $(PAPER).dvi *~  $(PAPER).log $(PAPER).pdf  $(PAPER
).ind
        rm -f $(PAPER).bbl $(PAPER).blg $(PAPER).ps $(PAPER).aux
        rm -f $(PNGFILES) $(PAPER).toc $(PAPER).idx $(PAPER).ilg
        rm -f $(LDIR)*.bak $(LDIR)*~  $(PAPER).adx $(PAPER).and
        rm -f $(PAPER).out $(PAPER).lot $(PAPER).lof
```

(c) from the emacs editor with Auctex installed (Section **??**), use either of the following shortcuts:

```
C+c C+c <RETURN>   (<- this compiles; note, will need to run multiple times)
# OR #
C+c C+a <RETURN>   (<- this compiles and opens)
```

4. open the resulting PDF (tip: keeping the PDF file open next to your editor allows for quickly viewing changes after each compile. Most editors will refresh with the current view and location of the document. If using Mac, consider using the Skim PDF viewer if Preview returns you to the beginning of the document after each compilation.)

3 Downloading and Setting up the MIT Thesis Template

Download the MIT thesis template from here: http://web.mit.edu/thesis/tex/

We recommend the following actions to make editing and compiling easy:

1. unzip the file and locate main.tex within the folder
2. change permissions on the file main.tex (chmod 644 main.tex)
3. comment out (%) the include line for chap2 in main.tex (this file doesn't yet exist)
4. create a makefile using the template provided in our labs. Ensure that you update the file name ("myfile" in the above example) to "main" (without quotation marks).
5. compile and open the thesis using the command line by running "make pdfo"
6. edit and update the file as necessary to include your information and title

4 Using the Thesis Template

Now that we have successfully compiled the thesis template, we can add files and make edits.

4.1 The Cover File

First edit the file cover.tex using the following guidelines.

- Find the title block and update your title.
- Find the author block and update with your name.
- Find the department block and update to your department (if necessary).
- Find the degree block and update the degree.
- Find and update the degreemonth, degreeyear, and thesisdate blocks.
- Find and update the thesis supervisor block.
- Find and update the chairman block. This is the person for each department that oversees all thesis administration. For course 2, it is at the bottom of this page: http://meche.mit.edu/education/graduate#featured-faculty
- Update the acknowledgement section with your favorite people.

4.2 The Contents File

The contents.tex file will not need edited unless you prefer a different order or would like to add a list of algorithms, etc.

4.3 Chapters

- Next edit Chapter 1 to be more consistent with your work.
- Create and edit Chapter 2 and Chapter 3 files called chap1.tex and chap2.tex, respectively.

4.4 Appendices

- Update the appa.tex and appb.tex files to be consistent with your thesis appendices.

4.5 Bibliography

- Update or replace the file main.bib to reflect your bibliography. Remember that this can be a symbolic link to a bibliography file that you might have else where in your file structure.

4.6 Compiling and Viewing

- Now that we have made the edits, compile and view from the command line. Hint: you may need to create a makefile using Section 2.3.

Listing 3: LaTeX File Structure.

```
> make pdfo
```