IIT Thesis Style File Help

1. How to start

To begin, you will need to save ***iitthesis.cls*** file where your tex file is saved. Create a new folder called *mythesis* on your disk and save ***iitthesis.cls*** file in this directory. You also need to put font files (***font11.cl***o or ***font12.clo)*** in *mythesis* directory (i.e. for writing your thesis with 12 point font size, you only need font12.clo). Additional figure files or tex files have to be put in the *mythesis* folder.

To use the IITTHESIS class file with default settings, use the following command at the start of your LaTeX source file:

```
\documentclass{iitthesis}
```

The following options are available for this command:

11pt prints the document using 11 point type for the running text

12pt prints the document using 12 point type for the running text. The 12 point is the default type.

draft uses single-spacing throughout the text pages. You can use this to save papers while working on the drafts of your thesis.

final uses the correct pseudo-double-spacing. This option is the default type.

twoside causes document to be formatted for printing on both sides of the paper. Your final thesis must be single-sided.

oneside causes document to be formatted for printing single sided. This is the default setting.

Example: `\documentclass[11pt,draft]{iitthesis}`

The default settings of the class file are one-sided, double-spaced and 12 point font size.

2. Title and Copyright Pages

The following commands can control what gets written in the front page:

\title{*thesis title***}**: Thesis title is automatically generated with all capital letters.

\author{*author's name***}**: Your full name is put with all capital letters into title page

\degree{*degree conferred***}**: The title of your degree, e.g. Master of Science.

\dept{*author's department***}**: The name of your department, e.g. Electrical Engineering

\date{*date degree conferred***}**: Date (month and year) of conferring degree

\coadvisortrue: Put co-advisor name in the page.
\coadvisorfalse: Not put co-advisor name in the page (there is no co-advisor by default)

\copyrightnoticetrue: Makes a copyright page.
\copyrightnoticefalse: Not make a copyright page (there is no copyright page by default).

\maketitle: You need this command to produce title page and copyright page

3. Preliminary Pages

The following commands can control what gets printed in preliminary pages:

\prelimpages: This command must come immediately after **\maketitle** to set up page style and page numbering of preliminary pages

\begin{*acknowledgement***}** To have acknowledgement environment, this is optional.
your text…
\end{*acknowledgement***}**

\tableofcontents: Produces Table of Contents for your thesis.

\listoftables: Produces List of Tables available in your thesis.

\listoffigures: Produces List of Figures for your thesis.

Attention: If the Table of Contents is more than one page, you can create the second page using **\moretoc** and **\moretox** commands. You should put these commands before the entry that is going to be on the second page of the Table of Contents. After this command, contents of Table of Contents are printed in the new Table of Contents page. Similarly, you can create the new pages for List of Figures and List of Tables with **\morelof** and **\morelot** commands, respectively.

\listofsymbols: Makes the List of Symbols page format. However, you can add symbols plus their relevant definitions using **\SymbolDefinition{***symbol***}{***definition***}** command.

\begin{*abstract***}** To have abstract environment, this is optional.
your text…
\end{*abstract***}**

4. Text Pages

The following commands can control what is included in text material:

\textpages: This command comes immediately before the first **\Chapter** command to set up page style and page numbering for text pages

\Chapter{*title of chapter***}**: Generates a new chapter with the title, in capital letters, and also adds the title of the chapter into Table of Contents.

\Section{*title of section***}**: Generates a new section and also puts the title of the section into Table of Contents.

\Subsection{*title of subsection***}**: Starts a new subsection, however, the title of the subsection is NOT included into Table of Contents.

\Subsubsection{*title of subsubsection***}**: Starts a new subsubsection, the title of the subsubsection is not included into Table of Contents.

5. Referring to chapters, sections, subsections

The basic commands are: **`\label{`*`marker`*`}`** and **`\ref{`*`marker`*`}`** which assigns a keyword *marker* to the chapter number (or section number etc.) that may referenced in the text. The assignment is made with **\label{}** command given after **\Chapter** command (or **\Section** command,…). In the body of the text, the command **\ref{}** inserts the number of the chapter, section, etc as reference. For example, a marker 'sec:int' is defined for the section :

```
\Section{Introduction}
\label{sec:int}
```

and this section is referred:

```
This is explained in Section \ref{sec:int}.
```

which generates the output 'This is explained in Section 1.1' .

6. Tables and Figures

Tables and Figures are numbered within chapters. When a table or figure title is longer than one line, carry-over lines are automatically formatted according to the guidelines in the thesis manual, so the student does not need to do anything for formatting. The '**table**' and '**figure**' environments are floating environments:

```
\begin{table}[where]
  table
\end{table}

\begin{figure}[where]
  figure
\end{figure}
```

In the above syntax, *figure* and *table* stand for the contents of the float, either in 'tabular' or 'picture' environments, together with a possible **\caption** command.

The argument *where* specifies the allowed locations for the figure and table. The specifiers are:

```
t  Top of Page                    p  Page of floats
b  Bottom of Page                 h  Here, if possible
```

For example, when **\begin{**table**}[**ht**]** is typed, it means that the table will appear on the top of some later page if it doesn't fit onto the current one. An example table is given below together with the resulted output table given in Table 1.1. Detailed description of how to create a table, and some table examples are provided in ***TableHelp.doc*** file.

---------- Table example ----------

```
\begin{table}[ht]
\caption{Nonlinear Model Results}       % title of Table
\centering                                    % used for centering table
\begin{tabular}{c c c c}                % centered columns
\hline\hline                            %inserts double horizontal lines
Case & Method\#1 & Method\#2 & Method\#3 \\ [0.5ex]  % inserts table heading
\hline                                  % inserts single horizontal line
1 & 50 & 837 & 970  \\                 % inserting body of the table
2 & 47 & 877 & 230  \\
3 & 31 & 25  & 415  \\
4 & 35 & 144 & 2356 \\
5 & 45 & 300 & 556 \\ [1ex]
\hline                                  %inserts single line
\end{tabular}
\label{table:nonlin}                    % is used to refer this table in the text
\end{table}
```

---------- end of the example ----------

Table 1.1. Nonlinear Model Results

Case	Method#1	Method#2	Method#3
1	50	837	970
2	47	877	230
3	31	25	415
4	35	144	2356
5	45	300	556

An example figure developed by using LaTeX commands is given below. The resulting figure is displayed in Figure 1.1. However, the easier way of a inserting a figure or graphs in the text is to draw it using a figure program, and importing it into the LaTeX tex file. How to create a figure, and how to import a figure into LaTeX tex file is detailed with some figure examples in ***FigureHelp.doc*** file.

---------- Figure example ----------

```
\begin{figure}[h]
\setlength{\unitlength}{0.14in}          % selecting unit length
\centering                               % used for centering Figure
\begin{picture}(32,15)      % picture environment with the size (dimensions)
                            % 32 length units wide, and 15 units high.
\put(3,4){\framebox(6,3){$H_{B}(q)$}}
\put(13,4){\framebox(6,3){$N[\cdot]$}}
\put(23,4){\framebox(6,3){$H_{C}(q)$}}
\put(0,5.5){\vector(1,0){3}}\put(9,5.5){\vector(1,0){4}}
\put(19,5.5){\vector(1,0){4}}\put(29,5.5){\vector(1,0){3}}
\put(-1,6.5) {$u(k)$}\put(30,6.5) {$y(k)$} \put(9.5,6.5)
{$x_{B}(k)$}\put(19.5,6.5) {$x_{C}(k)$}
\end{picture}
\caption{An LNL Block Oriented Model Structure}      % title of the figure
\label{fig:lnlblock}                     % label to refer figure in text
\end{figure}
```

---------- end of the example ----------

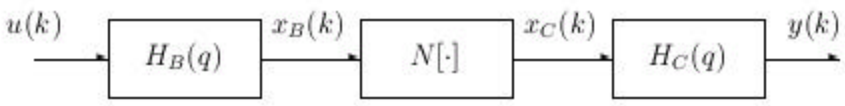

Figure 1.1. An LNL Block Oriented Model Structure

Note: If you need to need to use *landscape* mode, you can include *rotating* package adding **\usepackage{**rotating**}** at the beginning of the tex file. This package can be downloaded from the website: http://www.ctan.org . Then, using the commands below, a figure or a table can be created in landscape mode.

```
\begin{sidewaysfigure}[where]
  figure
\end{sidewaysfigure}
```

or,

```
\begin{sidewaystable}[where]
  table
\end{sidewaystable}
```

Example for landscape figure and table are given in the ***FigureHelp.doc*** , and ***TableHelp.doc*** files. Note that in the dvi preview the output appears incorrect for landscape mode. However, in ps or pdf output, the output appears correctly. This is also the case when the page is printed.

It might be difficult at times to control where a figure or a table is placed, because they are floating environments. Inserting **\clearpage** command might be useful in such cases. For example, if there are four figures, and if it is desired to put them in two consecutive pages, and then continue with text, a **\clearpage** command should be inserted before the first figure of the second page. Therefore, the text will appear after figures, rather than in-between them.

7. Referring to figures and tables in text

The commands **\label{***marker***}** and **\ref{***marker***}** are also used for referring to figure or table numbers. For example, you can refer to the number of the figure in the previous figure example (Figure 1.1) with **\ref{**fig:lnlblock**}** command in the text.

8. Equations

Equations are numbered within chapters automatically. Single line equations are produced in the "**equation**" environment

\begin{equation**}**

formula_text

\end{equation**}**

Example:

```
\begin{equation}
 x^2+y^2 = z^2
\label{eq:sample}
\end{equation}
```

The commands **\label{***marker***}** and **\ref{***marker***}** are used for referring to equation numbers. For example, you can refer to the number of the equation in the previous equation example (Equation 1.1) with **\ref{**eq:sample**}** command in the text.

Multi-line equations can be created with the "eqnarray" environment

\begin{eqnarray**}**

formula_text

\end{eqnarray**}**

Example:

```
\begin{eqnarray}
 x^2+y^2 = z^2 \\
 x^3+y^3 &<& z^3
\end{eqnarray}
```

In this case, both equations will be numbered. If you want to assign a number to only one of them, you can use **\nonumber** command. For example if you only number the second one, you can do this with:

```
\begin{eqnarray}
 x^2+y^2 = z^2 \nonumber \\
 x^3+y^3 &<& z^3
\end{eqnarray}
```

Note 1: LaTeX equations are typeset in "math italic" font by default. To change the alphabetic characters to roman font (this may be needed in chemical reactions), place the **\rm** command in the beginning of the equation. For example:

```
\begin{equation}
  \rm 3Li + V_{2}O_{5} = Li_{3}V_{2}O_{5}
\end{equation}
```

To use bold typed symbols in an equation, **\mathbf** command can be used such as

```
\begin{equation}
  \mathbf{x^2}+ \mathbf{y^2} = \mathbf{z^2}
\end{equation}
```

Note 2: WinEdt's GUI Page control, which can be put in the Tool Bar by enabling the "Show GUI Page Control" in Tool Bar's Context Menu, contains almost 500 buttons associated with TeX symbols and equation symbols. This can make the TeX beginner's life much easier. To activate it right click with the mouse on the toolbar menu and select “Show GUI Page Control”

Greek letters can be used choosing the “Greek” menu in the GUI Toolbar, and then clicking on the appropriate symbol icon. This inserts the command that corresponds to the particular symbol into text. For example, to print a σ symbol, **\sigma** command should be typed. An example with Greek letters is given below:

```
\begin{equation}
  \sigma^2 = \alpha^2 + \gamma^2
\end{equation}
```

and its output is

$$\sigma^2 = \alpha^2 + \gamma^2$$

9. Quotations

This environment automatically provides settings for quotations. Do not forget to include citations at the end of your quotation.

```
\begin{quotation}    % quotation environment
  Your quotation goes here!
\end{quotation}
```

10. Lists

There are three environments for constructing lists. In each one, every item begins with an **\item** command. In the *enumerate* environment each item is marked by a number, in the *itemize* environment the start of each item is given a marker (i.e. bullets). The third list making environment is *description*. In a description you specify the item labels inside square brackets after the **\item** command. A sample *itemize* with its output is given below:

```
\begin{itemize}
  \item Text of the first item in the list
  \item Text of the second item in the list
  \item Text of the third item in the list
\end{itemize}
```

- Text of the first item in the list
- Text of the second item in the list
- Text of the third item in the list

A sample *enumerate* is given below with its output:

```
\begin{enumerate}
  \item Suppression of hepatic glucose production
  \item Stimulation of hepatic glucose uptake
  \item Stimulation of glucose uptake by peripheral tissues, mainly muscle
\end{enumerate}
```

1. Suppression of hepatic glucose production

2. Stimulation of hepatic glucose uptake

3. Stimulation of glucose uptake by peripheral tissues, mainly muscle

A sample *description* is given below with its output:

```
\begin{description}
  \item[purpose] This environment is preferable when a number of
  words are to be defined
  \item[example] A keyword is used as a label
  \item[entry] An entry defines each label
\end{description}
```

purpose This environment is preferable when a number of words are to be defined

example A keyword is used as a label

entry An entry defines each label

11. Footnotes

Footnotes are generated with the command: **\footnote{***footnote_text***}**

The footnote numbering is incremented throughout the entire thesis. If a student uses only one footnote through the thesis, using the command

\renewcommand{\thefootnote}{\fnsymbol{footnote**}}**

a symbol instead of number can be used for the footnote.

12. Appendix

To produce an appendix, first you should put the **\appendix** command once to arrange the settings. Then, using the following command you can add as many appendices as you wish

\Appendix{*title of appendix***}**
your text ...

This command creates appendix title page and puts the title of the appendix into Table of Contents. Appendices will automatically be numbered alphabetically. Also, equations in appendices will be numbered associated number of the appendix.

13. Bibliography

Creating a bibliography for a thesis is detailed in ***BibliographyHelp.doc*** file.

Note: Sometimes, after you corrected one error in the tex file, and after simulating it again, the LaTeX still gives an error; even you don't have any error in your tex file. To solve this and similar problems, erase the working files, i.e., dvi output file, clicking on  icon in the tool bar of WinEdt.

14. References

Web sites for required softwares:

http://www.miktex.org/index.html	MikTeX Page
http://www.winedt.com/	WinEdt Editor for LaTeX
http://www.cs.wisc.edu/~ghost/doc/AFPL/get800.htm	Ghostscript and Ghostview

Web sites for help on LaTeX:

http://www.am.qub.ac.uk/latex/latex_2.html	LaTeX Help
http://www.tex.ac.uk/tex-archive/info/beginlatex/html/	A beginner's introduction to LaTeX
www.ctan.com	Packages available in this site.

Books:

"The LaTeX Companion" by Michel Goossens, Frank Mittelbach, Alexander Samarin, Addison-Wesley, 1994.

"A Guide to LaTeX: Document Preparation for Beginners and Advanced Users" by Helmut Kopka and Patrick W. Daly, 2nd Edition, Addison-Wesley, 1993.