Metathesis:
A \LaTeX\ template to Typeset Your Thesis for Submission to the School of Graduate Studies

(Changed the title by modifying the file thesis.tex)

by

© my-name (change this in thesis.tex)

A thesis submitted to the
School of Graduate Studies
in partial fulfilment of the
requirements for the degree of
Master of faculty or Doctor of Philosophy (change this in thesis.tex)

Department of dept-name (change this in thesis.tex)

Memorial University of Newfoundland

Month Year (change this in thesis.tex, too)

St. John’s Newfoundland
Abstract

This document provides information on how to write your thesis using the L\TeX\ document preparation system. You can use these files as a template for your own thesis, just replace the content, as necessary. You should put your real abstract here, of course.

“The purpose of the abstract, which should not exceed 150 words for a Masters’ thesis or 350 words for a Doctoral thesis, is to provide sufficient information to allow potential readers to decide on relevance of the thesis. Abstracts listed in Dissertation Abstracts International or Masters’ Abstracts International should contain appropriate key words and phrases designed to assist electronic searches.”

— MUN School of Graduate Studies
Acknowledgements

Put your acknowledgements here...

“Intellectual and practical assistance, advice, encouragement and sources of monetary support should be acknowledged. It is appropriate to acknowledge the prior publication of any material included in the thesis either in this section or in the introductory chapter of the thesis.”

— MUN School of Graduate Studies
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Chapter 1

Introduction

1.1 Getting started

This is the introductory chapter. This will give you some ideas on how to use \LaTeX{} [1] to typeset your document. Here is a sample quote using the \texttt{\textbackslash \textit{\textbackslash unquote}} environment:

\begin{quote}
\textit{\LaTeX{} is a system for typesetting documents. Its first widely available version, mysteriously numbered 2.09, appeared in 1985. \LaTeX{} is now extremely popular in the scientific and academic communities, and it is used extensively in industry. It has become a lingua franca of the scientific world; scientists send their papers electronically to colleagues around the world in the form of \LaTeX{} input.} [1] \end{quote}

The citation at the end is optional — if you don’t need it, then use \texttt{\textbackslash \textit{\textbackslash unquote}} without any arguments:

\begin{quote}
\textit{Here is a quote that does not have an associated citation after it. You can specify the citation before or after the quote manually.} \end{quote}
By default, all text is double spaced, however, quotes and footnotes must be single spaced. The left margin is slightly wider than the right margin. This is to compensate for binding.

An example mathematical formulae is show in Equation 1.1.

$$\sum_{i=0}^{n} i^2$$ \hfill (1.1)

A slightly more complicated equation is given in Equation 1.2:  

$$i\hbar \frac{\partial}{\partial t} \Psi(x, t) = -\frac{\hbar^2}{2m} \nabla^2 \Psi(x, t) + V(x)\Psi(x, t)$$ \hfill (1.2)

1.2 Cross References

In addition to using \ref to refer to equations, you can also use it (in conjunction with the \label command) to refer to sections and chapters without hard coding the numbers themselves. For example, this is Section 1.2 of Chapter 1. You can also refer to Appendix A, Subsection 1.7.1.1 below or any other place that has a \label. You can also use labels to refer to a page. For example, Chapter 2 starts on page 7.

1This is a single spaced footnote. SGS requires that footnotes be singled spaced and this can be done with the munfootnote command.

2Equation taken from the Schrödinger equation entry on Wikipedia
1.3 Some Suggestions

Here are a few recommendations:

- Before using this template, make sure you check with your supervisor.
- MUN’s library provides electronic access to some \LaTeX\ related textbooks which can be read online. Use the search term \texttt{latex (computer file)} on the Library’s web page.
- If you run into a problem, Google may be a helpful resource.
- Concentrate on content, let \LaTeX\ handle the typesetting.
- Don’t worry about warnings related to:
  - overfull \texttt{hboxes/boxes}
  - underfull \texttt{hboxes/vboxes}

  These can be corrected with modest rewording of your text prior to submission of your final copy.

1.4 The Makefile

You can use \texttt{make} to “build” your thesis on the Linux command line\footnote{Linux is available on all machines running LabNet in The Commons and in other computer labs on campus.} This will automatically run the \texttt{bibtex} program to create your bibliography and will also re-run \texttt{latex} as necessary to ensure that all references are resolved. A device independent
file (thesis.dvi) will be created, by default. If you are using this template in another environment other than the Linux command line, then the Makefile will probably not be useful to you.

- To make a PostScript copy of your thesis, type the following at the command line:
  
  make thesis.ps

- To generate a PDF copy of your thesis, run:
  
  make thesis.pdf

- To generate a PDF/A-1b copy of your thesis (which should satisfy the SGS’s ethesis submission requirements):
  
  make ethesis.pdf

- To remove all the files generated by bibtex and latex, use the command:
  
  make clean

- To remove the intermediate files, but leave the PostScript and DVI/PDF files intact, use the command:
  
  make neat

As you add or remove figures, chapters, or appendices to your thesis, make sure you keep the Makefile upto date, too (see the FIGURES and FILES macros in the Makefile).
1.5 Changing Fonts

Change fonts: Large, verbatim ~@#$%^&*(){}[], SMALL CAPS, slanted text, emphasized text, typewriter text.

1.6 Accents and Ligatures

Some accents: é è ô ü ç ů í ŋ ŏ ã ã

Some ligatures: flæffi

1.7 Some Lists

Here is a nested enumeration:

1. An enumerated list of items.
   
   (a) which can
   
   (b) nest
      
      i. to arbitrary
      
      ii. levels
   
2. More items
   
3. in the top
   
4. level list.

Another enumeration:
1. (a) Main 1 part 1
   (b) Main 1 part 2

2. (a) Main 2 part 1
   (b) Main 2 part 2

1.7.1 Subsection

1.7.1.1 Subsubsection

This section is referred to by Section 1.2.

1.7.1.2 Subsubsection

<Empty subsection>
Chapter 2

Figures and Tables

2.1 Figures

We can include encapsulated PostScript™ figures (.eps) in the document and refer to it using a label. For example, MUN’s logo can be seen in Figure 2.1.

Figure 2.1: This is MUN’s logo

Figure 2.2 shows a chart of MUN’s Fall enrollment from 2005 – 2009.\footnote{From Memorial University of Newfoundland — Fact Book 2009.} The figure
Figure 2.2: MUN Fall Enrollment 2005 – 2009

was created using the Calc spreadsheet application of the office suite OpenOffice.org.\footnote{This office suite can be downloaded at no cost from \url{http://openoffice.org/}. Unlike other commercial office suites, OpenOffice.org may be legally shared with colleagues and fellow students. There are versions for Linux, Microsoft Windows, Mac OS X and Solaris. Also, unlike commercial offerings, OpenOffice.org does not require activation using registration keys.}

This figure was reduced by 50%.

For larger figures, we can use landscape mode to rotate the page and display the figure using the \texttt{\ munlepsfig} command, as shown in Figure 2.3. The figure will be the only thing on the page when typeset in landscape mode. (The figure is reduced to 85% of its original size.)

Alternatively, if we just want to rotate the figure, but not the entire page, we can specify an \texttt{angle} attribute in the default argument of the \texttt{\ munlepsfig} command. The result is shown in Figure 2.4. If the figure is too large or if there isn’t sufficient text, then the figure may appear on its own page.

Note that all three of the enrollment figures are basically the same file, but with different names — on Linux, they are symbolic links to the same file. The filenames...
Figure 2.3: MUN Fall Enrollment 2005 – 2009 (landscape)
have to be different because the reference labels need to be unique.

Figure 2.5 shows a Petri net created using the xfig program (http://www.xfig.org/) which has very good support for \LaTeX. This figure has been reduced to 40% of its original size.
We can also create figures of text (such as short code snippets) using the `\muntxtfig` command, as show in Figure 2.6.

```c
#include <stdio.h>

int main(int argc, char **argv)
{
    printf("Hello world!\n");
    exit(0);
}
```

Figure 2.6: Hello World

## 2.2 Tables

We can also create tables, as seen by Table 2.1. Note that, as required by SGS guidelines, the caption for a table appears above the table whereas figure captions appear below the figures. Tables and figures can “float” — they may not appear on the page on which they are mentioned. \LaTeX{} tries to handle figure and table placement intelligently, but if if you have a lot of them without a reasonable amount of surrounding textual content, the figures and tables can accumulate towards the end of the chapter. Generally speaking, if there is sufficient text explaining the tables and figures or if the tables/figures are relatively small, this may not be a problem. However, if you have a lot of tables or figures, it may be a good idea to put them in an appendix and refer to them as the need arises.

Table 2.2 shows a different table in landscape mode.\footnote{This data was also taken from the \textit{Memorial University of Newfoundland — Fact Book 2009.}} This is useful if your table

3This data was also taken from the \textit{Memorial University of Newfoundland — Fact Book 2009.}
Table 2.1: Fall Semester Enrollment

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th></th>
<th>Graduate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F/T</td>
<td>P/T</td>
<td>Total</td>
<td>F/T</td>
</tr>
<tr>
<td>2004</td>
<td>13,191</td>
<td>2,223</td>
<td>15,414</td>
<td>1,308</td>
</tr>
<tr>
<td>2005</td>
<td>13,184</td>
<td>2,143</td>
<td>15,327</td>
<td>1,375</td>
</tr>
<tr>
<td>2006</td>
<td>12,809</td>
<td>2,224</td>
<td>15,033</td>
<td>1,373</td>
</tr>
<tr>
<td>2007</td>
<td>12,634</td>
<td>2,155</td>
<td>14,789</td>
<td>1,403</td>
</tr>
<tr>
<td>2008</td>
<td>12,269</td>
<td>2,208</td>
<td>14,477</td>
<td>1,410</td>
</tr>
<tr>
<td>2009</td>
<td>12,382</td>
<td>2,323</td>
<td>14,705</td>
<td>1,567</td>
</tr>
</tbody>
</table>

is too wide for the page. Tables are double-spaced by default. To single-space a table, change the \texttt{\baselinestretch} before beginning the table environment. Remember to restore it after the environment has ended.
Table 2.2: Masters Degrees Conferred by Convocation Session — 1950 to 2009

<table>
<thead>
<tr>
<th>Degrees</th>
<th>May</th>
<th>Oct</th>
<th>May</th>
<th>Oct</th>
<th>May</th>
<th>Oct</th>
<th>May</th>
<th>Oct</th>
<th>May</th>
<th>Oct</th>
<th>1950–2004</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Applied Science</td>
<td>14</td>
<td>2</td>
<td>15</td>
<td>8</td>
<td>28</td>
<td>1</td>
<td>21</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>98</td>
<td>194</td>
</tr>
<tr>
<td>Master of Applied Social Psychology</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>28</td>
<td>54</td>
</tr>
<tr>
<td>Master of Applied Statistics</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>37</td>
<td>49</td>
<td>26</td>
<td>43</td>
<td>14</td>
<td>42</td>
<td>14</td>
<td>56</td>
<td>13</td>
<td>44</td>
<td>994</td>
<td>1,332</td>
</tr>
<tr>
<td>Master of Business Administration</td>
<td>14</td>
<td>16</td>
<td>23</td>
<td>6</td>
<td>33</td>
<td>12</td>
<td>33</td>
<td>11</td>
<td>33</td>
<td>8</td>
<td>818</td>
<td>1,007</td>
</tr>
<tr>
<td>Master of Education</td>
<td>107</td>
<td>87</td>
<td>120</td>
<td>55</td>
<td>147</td>
<td>74</td>
<td>108</td>
<td>76</td>
<td>113</td>
<td>75</td>
<td>2,603</td>
<td>3,565</td>
</tr>
<tr>
<td>Master of Employment Relations</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>83</td>
</tr>
<tr>
<td>Master of Engineering</td>
<td>20</td>
<td>19</td>
<td>20</td>
<td>10</td>
<td>16</td>
<td>10</td>
<td>15</td>
<td>13</td>
<td>4</td>
<td>19</td>
<td>440</td>
<td>586</td>
</tr>
<tr>
<td>Master of Environmental Science</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>66</td>
<td>89</td>
</tr>
<tr>
<td>Master of Marine Studies</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>26</td>
<td>38</td>
</tr>
<tr>
<td>Master of Music</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Master of Nursing</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>4</td>
<td>17</td>
<td>4</td>
<td>23</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>116</td>
<td>203</td>
</tr>
<tr>
<td>Master of Oil and Gas Studies</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Master of Philosophy</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>112</td>
<td>141</td>
</tr>
<tr>
<td>Master of Physical Education</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>84</td>
<td>109</td>
</tr>
<tr>
<td>Master of Public Health</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Master of Science</td>
<td>40</td>
<td>32</td>
<td>41</td>
<td>19</td>
<td>29</td>
<td>25</td>
<td>35</td>
<td>29</td>
<td>32</td>
<td>23</td>
<td>1,653</td>
<td>1,958</td>
</tr>
<tr>
<td>Master of Science (Kinesiology)</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Master of Science (Medicine)</td>
<td>18</td>
<td>7</td>
<td>11</td>
<td>8</td>
<td>10</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>89</td>
</tr>
<tr>
<td>Master of Science (Pharmacy)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Master of Social Work</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>10</td>
<td>257</td>
<td>322</td>
</tr>
<tr>
<td>Master of Women’s Studies</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total Masters</strong></td>
<td>287</td>
<td>263</td>
<td>302</td>
<td>177</td>
<td>321</td>
<td>212</td>
<td>296</td>
<td>239</td>
<td>243</td>
<td>204</td>
<td>7,369</td>
<td>9,913</td>
</tr>
</tbody>
</table>
Chapter 3

Dealing with Errors

\LaTeX{} can produce cryptic error messages at times. However, with some experience, it is usually not too difficult to determine what the problem is and how to fix it.

As mentioned earlier, appropriate search terms in Google may help you fix these error messages.
Chapter 4

Lorem Ipsum

Now, for your reading pleasure, some _Lorem ipsum_, courtesy of:

<http://www.lipsum.com/>

This gives a good view of the margins — note that the left margin is a bit wider than the right margin to accommodate binding.


amet est congue auctor.

Chapter 5

Handling Citations

BibTeX can be used to handle all your bibliographic needs. Simply add references to the file ref.bib and BibTeX will take care of the rest. An example of a BibTeX book, conference paper and journal article are given in the sample ref.bib file. Many online journals have links to BibTeX citations that you can download and incorporate into the ref.bib file.

The order of the fields is unimportant. BibTeX will display them in the correct order when constructing your bibliography. Also note that you can specify information about a reference that may not even be included in the actual bibliography. For example, the ISBN field is not required by the bibliography, but you can, if you want, put the ISBN to the BibTeX entry.

We can cite a journal article [3] and a conference paper [2] in the same way as a book citation. More information can be found in [1].
Chapter 6

Conclusions

That’s all folks!
Bibliography


Appendix A

Appendix title

This is Appendix A.

You can have additional appendices too (e.g., apdxb.tex, apdxc.tex, etc.). If you don’t need any appendices, delete the appendix related lines from thesis.tex and the file names from Makefile.