THE TITLE OF THIS DISSERTATION

By

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A dissertation submitted in partial fulfillment of
the requirements for the degree of

DOCTOR OF PHILOSOPHY

WASHINGTON STATE UNIVERSITY
My Department

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of BUTCH T. COUG find it satisfactory and recommend that it be accepted.

Committee member 1, Ph.D., Chair

Committee member 2, Ph.D.

Committee member 3, Ph.D.

ACKNOWLEDGMENTS

This section entitled "Acknowledgement" should be used if the writer wishes to acknowledge the assistance received. There is no limit to the number of pages in this section.

THE TITLE OF THIS DISSERTATION

Abstract

by Butch T. Coug, Ph.D.
Washington State University
May 2017

Chair: Committee member 1

The text of the abstract goes here. The abstract must be under 350 words (in the body). The abstract, title and signature pages should be printed on 100% cotton fiber paper and delivered to the Graduate School within 5 working days of the final defense. The 100% cotton pages are filed for permanent retention with Manuscripts, Archives and Special Collections (MASC) unit after cataloging is completed. Doctoral dissertations will be kept digitally in their entirety in the WSU Research Exchange https://research.wsulibs.wsu.edu:8443/xmlui/

Care must be taken in the preparation of the abstract since this will be published by ProQuest/UMI Dissertation Publishing without further editing or revision. No footnotes, references, or unexplained abbreviations are to be used in an abstract since it is published separately.

The purpose of the abstract is to give the reader a concise and accurate synopsis of significant elements in the manuscript so that the reader will be able to determine whether it is advisable to read the complete dissertation/thesis.

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Dedication

dedicated to ...

(This page is optional)

CHAPTER 1. GETTING TO KNOW LaTeX FOR YOUR WSU GRADUATE THESIS

LaTeX is an awesome code-based, open source framework for scientific word processing. It is particularly powerful in fields which require frequent use of equations and adaptive in-text references. This template provides the necessary prerequisites to satisfy the 2017 formatting requirements of the Washington State University Graduate School. The text found here is intended to inform and serve as an example of formatting commands in LaTeX.

1.1   Using this template

To use this template, begin with the file `/main/main_thesis.tex`. As you work with your thesis, you can include additional packages to meet your needs by including them in the header `main_thesis.tex`. Going through the main file, replace all personal information with your specifics in the section labeled "Information".

Then under the "Main Content" in the main file, you may need to uncomment, rename, or add to the inclusion of chapter files depending on how many chapters you will be including.

That is about it for global formatting!

Your chapters are simply included by replacing the files `ChapterX.tex` with the body of your text as they are in the template files. Each chapter is included as the main file is compiled.

1.2 Including figures, tables, and equations

Figures are included as Fig. 1.1 is done, as an example.

Figure 1.1: An image of the Butch statue taken from the 2015-2016 Graduate Student Survival Guide.

The figure environment can be anchored to a single place in the text with the `[H]` flag or allowed to float to an appropriate place by omitting the flag. A caption briefly explains the figure while an appropriate label is assigned to the figure to make for easy reference in the body of the text.

The image file itself needs to be either in the folder `/main/` or in the folder `/Figures/`. Notice that you do not use the file name's suffix when including it (eg.

jpg, gif, eps, etc.). There are two primary ways to compile your LaTeX document: PDFTeXify or LaTeX. The former will work with .jpg, pdf, and .png file types while the latter requires .eps file types. More details can be found online at

`https://en.wikibooks.org/wiki/LaTeX/Importing_Graphics#Supported_image_`
`formats`.

Table 1.1 is an example of a short table. Typing these structures in by hand can be quite tedious, but there are a variety of tools available online, including the package `csvsimple` to import Excel files directly, to help in generating a tabular environments.

a	1	2
b	3	4
c	5	6

Table 1.1: A table

Eq. 1.1 is an example of an equation.

$$\left(-\frac{\hbar^2}{2m}\nabla^2 + V(\vec{x})\right)\psi(\vec{x}) = E\psi(\vec{x}) \tag{1.1}$$

1.3   Managing a bibliography

One of the more powerful and convenient tools used while compiling a LaTeX document is BibTeX. BibTeX is the file format and compiling routine used to take a text file containing bibliographic data and create a particular style of bibliography, complete with in-text references. The source data BibTeX comes from a .bib file which is a collection of inputs of the form

```
@Article{asimov59.01,

  author  = {Isaac Asimov},

  title   = {The Last Question},

  journal = {Science Fiction Quarterly},

  year    = {1959},

  month   = {November},

}
```

The recommended .bib file manager is JabRef (www.jabref.org). This program is an open source interface used to organize and input bibliographic data in a simple, fill-in-the-blank manner which then generates the necessary .bib file. Within the text you cite using a short BibTeX key[1] then one then simply points to the .bib file near the end of the main .tex file. Compiling with BibTeX will sometimes require consecutive Bib/TeX compiles.

1.3.1 Bibliography styles

The standard style of bibliography used in this template may not be to your liking. By including the appropriate .bst file, BibTeX will automatically use the corresponding bibliographic style. A list of common styles and further explanation can be found here:

https://www.reed.edu/cis/help/LaTeX/bibtexstyles.html

One need only find the appropriate .bst file (this is all open-source after all), save it into the main folder, then use that style's name (without the .bst suffix) in the argument of \bibliographystyle{}.

CHAPTER 2. WSU GRADUATE SCHOOL GUIDELINES

The following is a collection of requirements from the Graduate School template.

There are a variety of methods of dividing the paper. The dissertation/thesis may be divided by chapters, sections or manuscript numbers. The important thing is to remain consistent throughout the entire dissertation/thesis.

2.1 Dissertation/Thesis Format Notes

2.1.1 100% Cotton Fiber Paper

100% cotton paper refers to the fiber content of the paper. All 100% cotton paper may be identified by holding the sheet of paper up to the lightthere must be a water mark on the paper indicating 100% or Pure Cotton. If you are uncertain of whether the paper you intend to use is acceptable, please call the Graduate School. WSU water- marked bond paper is NOT acceptable. Make sure your title page, signature page, and abstract page is on 100% cotton with original signatures in black ink. You may either print (good quality printer; inkjet printers might smudge or ink not dry correctly) or type directly onto the 100% cotton paper.

2.1.2 Corrections

Strikeovers or noticeable corrections are not permitted. Use of any cover-up or whitening substance (e.g., Liquid Paper, Snopake, etc.) is not acceptable.

2.1.3 Page Numbers

The page number is the only item designed to extend into the (minimum) 1 inch margins, however, there must still be a minimum 1/2" margin around the page number. Placement of page numbers must be consistent throughout the paper. You may number the pages in the upper right header or centered footer. Each and every page must be assigned a page number. Be consistent on where the pages numbers are located; preliminary pages and text pages should have the page numbers in the same location. On the title and half-title pages, the number is not shown, but must be accounted for (A sample half-title page follows). Preliminary pages, abstract, acknowledgements, table of contents, etc., are numbered with lower case Roman numerals (e.g., i, ii, iii, iv, v, vi). The text beginning with the Introduction (the first page that follows your Dedication) is numbered with Arabic numerals, and always begins with page 1. (Every page should have a number, even though on certain pages the numbers are not shown.)

2.1.4   Fonts

The font must be consistent throughout your paper. Some exceptions will be made for computer generated graphics and tables where it is not possible to match fonts exactly. If you plan to use a dot matrix printer, please have a sample sheet approved by the Graduate School.

2.1.5   Handwriting

Handwriting is not acceptable in your dissertation/thesis (except in the Appendix). Any graphics, drawings, figure labels, etc., must be generated by computer, typewriter, Kroy lettering, or professional draftsperson.

2.2   Alternative Format for Dissertation and Thesis

In addition to the standard format for dissertation/thesis, the Graduate Studies Committee has approved an alternative format, which refers to the use of articles and/or book chapters to replace the standard dissertation/thesis chapters. The following guidelines will be followed by the Graduate School when approving and/or accepting the alternative format for dissertations and theses:

1. The alternative format for dissertation/thesis shall consist of at least one (for

Masters thesis) or at least two manuscripts (for Doctoral dissertation), based upon research conducted at Washington State University, either previously published or to be published.

2. The graduate student is to be the major contributor and writer of the manuscript, as usually represented by sole author. In a case of multiple authorship, the contribution of each author is to be detailed in the Introduction or separate Attribution page.

3. The graduate student is to provide the Graduate School with a letter of copyright release for previously copyrighted material.

4. Whether previously published or to be reviewed, the manuscript shall be formatted to fit within the margins acceptable by the Graduate School and be in a single font style throughout.

5. The dissertation/thesis including the manuscript is to be paginated consecutively.

6. Archival digital photographs, properly identified, are to be included in the manuscript. Photocopies or scans of photographs may be substituted only when of high quality.

7. The dissertation/thesis is to include a title page, signature page, abstract, and

table of contents as specified by the Graduate School.

8. In the case of dissertations/theses composed of multiple manuscripts, the student must include additional materials that serve to integrate the presentation of the manuscripts. These could include a General Introduction, Discussion, and/or Conclusion. Full citations of previously published work must be included.

9. With the exception of procedures outlined here, the submission of the manuscript format for dissertations and theses should be in accordance with the policies and procedures set forth by the Graduate School.

10. When manuscripts are published (or to be published) in different journals where styles vary, the introduction must include an explanation of the different formats. The manuscripts may, therefore, be written in the style specified by the journal(s).

APPENDICES

APPENDIX A. APPENDIX NAME

Some appendix text.

Figure A.1: An image of the Butch statue taken from the 2015-2016 Graduate Student Survival Guide.

And this is an equation in the appendix

$$F = ma \tag{A.1}$$

APPENDIX B. APPENDIX NAME

Some appendix text.

Figure B.1: An image of the Butch statue taken from the 2015-2016 Graduate Student Survival Guide.

B.1   Section in appendix

Where the figure in Appendix A is labeled Fig. A.1 and the figure in Appendix B is labeled Fig. B.1.

B.1.1   Subsection in appendix

BIBLIOGRAPHY

[1] Isaac Asimov. The last question. *Science Fiction Quarterly*, November 1959.