The NDdiss $2_{\mathcal{E}}$ class*

2017-05-09

Abstract

The $\mathtt{NDdiss2}_{\mathcal{E}}$ class can be used to type set dissertations submitted to the University of Notre Dame's Graduate School. This class conforms with the Graduate School guidelines as of Spring 2013 for the layout of the Ph.D. dissertations and Master's theses.

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^{*}Version 3.2017.2, dated 2017-05-09.

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1 Introduction

The \LaTeX 2_{ε} document class $\texttt{NDdiss}2_{\varepsilon}$ is suitable for producing dissertations and theses conforming to the Spring 2013 guidelines of the Graduate School at the University of Notre Dame. The package is extends the standard \LaTeX book class.

The latest version of this class and related documentation can be found in a few places:

- On CTAN: https://ctan.org/pkg/nddiss
- On GitHub: https://github.com/ndlib/nddiss
- On the University of Notre Dame's Graduate School website: http://graduateschool.nd.edu/

1.1 Disclaimer

While this class does as much formatting as it can, there are a few formatting items that you, the user, must do manually (see Section 5). Please keep in mind that only *you* are responsible for the correct formatting of your dissertation/thesis. Should you have questions, please consult the official formatting guide or email dteditor@nd.edu.

1.2 Dependencies and Limitations

This classfile depends on many other packages to be installed. All of these required packages are available through MiKTeX and TeXLive, and chances are good they are already installed by your TeX distribution. Refer to section 6 for a list of the essential packages.

The document class has only been tested with a small subset of available packages. There are numerous packages you may want to use for your work, but they may have to be modified accordingly. Things lacking include support for the subfigure and subcaption package and proper formatting of the captions in such an environment. Formatting of the captions could be much easier with the caption¹ in general, and is a thing-to-do for future versions. Permitting use of the subfigure and subcaption packages would also be a good thing to do if an update is

¹caption package by Axel Sommerfeldt v3.0b[2004/05/16] and higher

ever made for reaosns other than resolving conflicts caused by changing Graduate School regulations. If you want to use a subfigure environment and don't need the caption capabilities of the subcaption package, adding the following code to your preamble may allow you to do this and still have your captions formatted according to the Graduate School's rules.

```
\usepackage{subcaption}
\makeatletter
\renewcommand\LT@makecaption[3]{%
  \LT@mcol\LT@cols c{\hbox to\z@{\hss\parbox[t]\LTcapwidth{%
  \vskip\abovetableskip%
  \centering\normalspacing
  #1{#2 }\\[\single@skip]
  {#3}\par
  \endgraf\vskip\belowtableskip}%
  \hss}}
\makeatother
```

1.3 History

The NDdiss2 ε package is an extensive rewrite by Sameer Vijay of an earlier NDthesis class for formatting dissertations. Megan Patnott updated NDdiss2 ε to the 2013 Graduate School Formatting guidelines. The NDThesis class was by D. A. Peterson.

2 Quick Start

This section provides a template you can use to get started. The distribution comes with a more detailed file, template.tex, that is similar, but more detailed.

```
\documentclass[numrefs,final]{nddiss2e}
\begin{document}

\frontmatter

\title{Title in Title Caps}
\author{Your Name}
\work{Dissertation}
\degaward{Doctor of Philosophy}
\advisor{}
\department{}
\maketitle
\makepublicdomain % There is also a copyright option
\begin{abstract}
Abstract here
```

```
\end{abstract}
% dedication is optional
\begin{dedication}
For Someone
\end{dedication}
\tableofcontents
\listoffigures
\listoftables
% list of symbols is optional
\begin{symbols}
\sym{a}{definition of a}
\end{symbol}
% preface is optional
\begin{preface}
Preface here
\end{preface}
\begin{acknowledge}
Thanks to everyone
\end{acknowledge}
\mainmatter
\chapter{A New Dawn} % Chapter 1
All the text ...
\appendix
\chapter{Additional Data} % Appendix A
\backmatter
\bibliographystyle{nddiss2e}
\bibliography{bibdatabase}
\end{document}
```

3 Usage

Invoke the NDdiss2 ε document class by adding \documentclass[$\langle options \rangle$] {nddiss2 ε } at the beginning of your LATEX source file. For most people the options \documentclass[draft]{nddiss2 ε } is good enough for the initial revisions. If you want your figures to display, use \documentclass[review]{nddiss2 ε }.

Use the option \documentclass[final] {nddiss2e} for your formatting check submission, and \documentclass[final,noinfo] {nddiss2e} for the final sub-

mitted version.

If you have two advisors, add the option twoadvisors here, and then use \secondadvisor{} later on the title page to give the name of the second advisor.

By default, all documents produced using this class are formatted as one-sided, doublespaced, letter-sized pages, per the Graduate School requirements. In theory, the class file's specifications should override your system's defaults. If, however, you are getting A4 paper, try adding \pdfpagewidth{8.5in} and \pdfpageheight{11in} immediately after the \documentclass in your file.

3.1 Options

draft review final Exactly *one* of these options must be used. The draft and review options enable faster processing of the document and also include annotations to help write and edit it.

The draft option enables a fast processing and preliminary document showing the labels for citations, tables, figures etc. and a black solid rule highlighting the horizontal overflows. Additionally, figures are replaced with placement boxes showing where the included figure would be placed. Such a document would be the one you would prepare for revising your text during writing stages.

The review option makes it possible to prepare a document that is one step closer to the final version. Almost all the formatting of the final version is present, but the labels and keys as in the draft option are also displayed. A document prepared with the review option would be the one to personally check for proper formatting and possibly giving to your advisor if she wished to suggest corrections.

The final option produces the document to be submitted to the Graduate School for formatting checks and as the final version.

 ${\tt twoadvisors}$

The twoadvisors option will produce a title page with space for two advisors. Use the \secondadvisor macro command (discussed in Section 4.1) on the title page to give the name of the second advisor.

noinfo

The noinfo option disables the information page produced when the review or final style options are used. It is recommended that you only use this option when making the final submission to the Graduate School.

nonatbib

With this option, nddiss2e will not load the natbib package and allow to use a different bibliography package, e.g., biblatex instead.

numrefs textrefs These options determine how citations are displayed in the text. The default style is numrefs. The numrefs option produces a numbered citation sytle by using natbib and the "nddiss2e" or "nddiss2enoarticletitles" citation style file². The textrefs option changes the citation style to be similar to "author-date" style with the same files.

sort compress sort&compress

At most one of these options should be selected. The **sort** option will cause both numerical and "author-date" style references to be sorted in the order that they appear in the bibliography when multiple references are cited. The **compress**

²nddiss2e.bst is a slight modificiation of abbrvnat.bst in the natbib package; nddiss2enoarticletitles.bst is essentially the same as nddiss2e, but does not display the titles of journal articles, as this is the standard in some fields; nddiss2enosort.bst is essentially the same as nddiss2e, but sorts by order of appearance in text instead of author name.

option compresses numerical citations, e.g. it turns [1,2,3] into [1-3], and does nothing to "author-date" style references. The sort&compress option first sorts and then compresses numerical references, and only sorts "author-date" style references

Since the same set of packages and style files result in differing citation formats, refer to the documentation for natnotes.dvi in your TEXMF tree, to be aware of the various ways in which you can make a citation in your text.

10pt 11pt These options adjust the font size of the body text. The choice is only applicable when the draft option is used, and defaults to 10pt. When review or final is used, this option is ignored and 12pt is used.

12pt twoside

The twoside option causes the class file to prepare a document meant to be printed double-sided. This option is strictly for if you want to prepare a two-sided document for your own use. The only difference from the one-sided document is in the page layout. Do NOT use this option when preparing to submit it to the Graduate School.

nocenter

The nocenter option allows non-centered chapter titles. Do NOT turn in your document this way to the Graduate School!

openbib

The openbib option formats your bibliography in the following manner:

Author

Article/book title

Other information

Website, if applicable

Usually you would not need to use this option since the default layout of the bibliography is acceptable.

4 Arrangement of Contents

A dissertation or a thesis document contains the following parts, in the order listed. Only those marked as optional may be omitted.

- 1. Title Page
- 2. Copyright page
- 3. Abstract (optional for Master's thesis)
- 4. Dedication (optional)
- 5. Table of Contents
- 6. List of Figures
- 7. List of Tables
- 8. List of Symbols (optional)
- 9. Preface (optional)
- 10. Acknowledgments (optional)

- 11. Text
- 12. Appendix (or Appendices) (optional)
- 13. Bibliography (or References, or Works cited)

The macros and environments described below ease the formatting of these parts.

4.1 Title Page

\maketitle The title page is generated by \maketitle with no arguments. This macro has been modified for providing a title page in the correct format.

You can set information to display on the title page by using the following commands before invoking \maketitle.

• The title of the document, using the \title macro. You may use linebreaks within the title, protected via \protect\\ and the title may be up to four lines long.

• Give your name in full and exactly as registered with the Graduate School, using the \author macro, e.g. \author{Gary Graham Gordon-Graeme}).

• Whether the document is a *Thesis* or a *Dissertation* as the argument of the \work macro, e.g. \work{Dissertation}).

• Specify the degree you're aiming for with the \degaward macro. Should be one of \degaward{Doctor of Philosophy} (without the "in subject" or \degaward{Master of Science\\in\\Engineering}.

• Give the name of your advisor with the \advisor macro.

• Give the name of your second advisor, if any, with the \secondadvisor macro. You also need to pass in the twoadvisors option in the \documentclass declaration.

• Give the name of your department with the \department macro, e.g. \department{Gnulogical Engineering}).

• The month and year of the defense of the thesis with the \degdate e.g. \degdate{June 2004}). If you forget to declare this, the current month/year will be used.

4.2 Copyright Page

The \makecopyright macro should be invoked after \maketitle to produce a copyright page. Prior to calling \makecopyright, you may specify a different name for the copyright holder (the default is the name given through the \author macro) and for the copyright year (the default being the current year). Do this with the \copyrightholder $\{\langle name \rangle\}$ and \copyrightyear $\{\langle year \rangle\}$ macros.

. .

\degaward{}

 $\advisor{}{}$

 $\scalebox{} \scalebox{} \sca$

\department{}

\makecopyright

\copyrightholder{}

\copyrightyear{}

 $\displaystyle \{ degdate \}$

\makepublicdomain

Alternatively, you can use \makepublicdomain to produce a page with the message "This document is in the public domain." Note that the absence of the copyright page does *not* place your dissertaion in the public domain, you must declare it as such explicitly.

4.3 Abstract Page(s)

abstrac

The abstract text should be placed between \begin{abstract} and \end{abstract}. If the abstract is longer than one page, the environment will place the author's name in the top-right header.

\abstractname{}

You may use $\abstractname{\langle text \rangle}$ to change the abstract caption to text. Default name: Abstract. You probably don't need to change it.

4.4 Dedication

dedication

The dedication is optional. If you want one, use the dedication environment. The format of dedication is essentially free. This environment will center the text of your dedication vertically on the page.

\dedicationame{}

You may use $\dedicationname{\langle text \rangle}$ to change the title for the dedication page. Default name: $\mbox{\{}\}$ i.e. an empty title. You probably don't need to change it.

4.5 Table of Contents; Lists of Figures and Tables

\tableofcontents
 \listoffigures
 \listoftables
 \contentsname{}
\listfigurename{}

\listtablename{}

Use the macros \tableofcontents,\listoffigures and \listoftables, in this order, to produce the required table of contents and lists of figures and tables.

You may use \contentsname, \listfigurename and \listtablename to change the titles for these sections. By default they are CONTENTS, FIGURES, and TABLES. You probably don't need to change them.

4.6 List of Symbols

symbols

The list of symbols is optional. Use the symbols environment to format a list of symbols/abbreviations used in your work. The environment takes an optional argument specifying the desired format, e.g. \begin{symbols}[c1] for first column centered and the next column aligned left. By default, the first column will be right aligned and the second column will be left aligned. You may use any of the standard tabular column alignment options.

 $\sum_{sym}{}{}$

The command \sym{\symbol}\{\definition\} may make the task of entering the symbols and their meanings in the symbols environment easier. \sym takes two arguments: the first, a math "object" and the second, the plain text describing the symbol. Since the first argument is in math mode, any plain text needs to be wrapped with \mathrm{\..} Likewise, any math symbol in the second argument needs to placed in \\$..\\$. Example: \sym{\beta_\mathrm{norm}}{Definition for \$\beta\$}

\symbolsname{}

You may use \symbolsname{} to change the title of the symbols section. Default name: SYMBOLS.

4.7 Preface

preface
\prefacename{}

The preface environment is provided for formatting the preface to your work.

You may use \pref{cename} to change the name of this section. Default name: PREFACE.

4.8 Acknowledgments

acknowledgments \acknowledgename{}

The environment acknowledgments is used to format the acknowledgment *chapter*. You may use \acknowledgename to change the name of this section. Default name: Acknowledgments.

4.9 Text

\mainmatter

Use the macro \mainmatter to mark the beginning of your text. You can then use \part, \chapter, \section, \subsection, and \subsubsection commands, as you would with the book class. Text is formatted in \normalspacing i.e. double-spacing. The pages are numbered in plain pagestyle such that the page numbers are centered in the bottom. The chapter titles can be multi-line, and if so are formatted doubly spaced.

\unnumchapter{}

Use the macro \unnumchapter to create to create unnumbered chapters that appear in the Table of Contents.

4.10 Appendix

\appendix

Use the command \appendix after the last normal chapter to signal that all following chapters are to be appendices. This use is the same as in the book class. To begin an appendix, use the \chapter{ $\langle title \rangle}$ macro.

4.11 Backmatter

\backmatter

The \backmatter macro separates the bibliography, index and glossary from the main matter and any appendices.

4.12 Bibliography

\bibliography

If you are using BibTeX (and why would you not want to use BibTeX?), use the $\bibliography{\langle bibfile \rangle}$ macro to generate the bibliography. You should refer to BibTeX manual for details about making a .bib file and format for the entries.

For citing references in the text, the package natbib is included with either the settings numbers, sort&compress (numrefs option) or authoryear, sort (textrefs option). The package natbib is a package that has numerous macros for *citing* in different ways.

Warning: The packages cite and citation are NOT compatible with the natbib package, and will cause errors if used.

thebibliography

If you are not using BibTeX make your own bibliography by using the thebibliography environment. In this case, you would have to write the reference entries

in the right format in your .tex source file itself. If you are using the textrefs option, you'll need to consult the natbib manual to ensure that you enter your entries in the format required by the package.

\bibname{}

You may use $\bibname{\langle newbibname \rangle}$ to change the name of this section. Default name: Bibliography.

4.13 Chapter-wise Bibliography

By default the bibliography appears at the end of your work and contains all the references from the entire entity. If you need to have a separate bibliography for each chapter, you can do it in the following way. First, load the package chapterbib without any options in the preamble of your main source file and redefine the commands \bibname and \bibsection as shown below.

```
%% Main source file %%
\documentclass[...]{nddiss2e}
\usepackage{chapterbib}
\renewcommand{\bibname}{Cited works}
\renewcommand{\bibsection}{\section{\bibname}}
...
\begin{document}
\include{chptr1}
...
\include{appndx}
\end{document}
```

To process the bibliography for each chapter individually, the chapters or sections must be separated into different files and *include* them in the main file, as shown above. Each such \included file must contain its own \bibliographystyle{nddiss2e} and \bibliography{...} command at an appropriate position. There should not be any bibliographic commands in the main source file.

After compiling the main tex file once (with latex or pdflatex), the .aux files needed by bibtex will have been created and you can then run bibtex on each of the separate source files to obtain a .bbl for each file. The remaining steps are the same as for a normal .tex file.

You can find more details of this in the natbib manual.

5 Note For Authors

The dissertation author must make sure that the following conditions are met in order to generate a dissertation acceptable by the Graduate School:

• The List of Figures must be *before* the List of Tables, i.e. the macro command \listoffigures comes before \listoftables in the frontmatter.

- Table captions must be *above* the corresponding table, In case of the table environment, this can be achieved by putting \caption before you include the table (e.g. in a tabular environment).
- Figure captions should be *below* the corresponding figure. In the figure environment, the \caption goes after the \includegraphics macro command.
- The bibliography is the last section/chapter of the thesis—unless you are using the *chapter-wise* bibliography.

5.1 Tips and Suggestions

- It is *strongly* recommended that you compile your document with pdfIATEX. Compiling to dvi or postscript first may result in "fuzzy" fonts when viewing the document on your screen. Additionally, the benefits of hyperref and pdflscape are only available if you compile using pdfIATEX.
- Use the \toprule, \midrule and \bottomrule macro commands (from the booktabs package) in tables for generating the appropriate horizontal rules. Refrain from using vertical rules to separate columns in tables as much as possible.
- Use the threeparttable environment for tables with tablenotes.
- Use the longtable environment for handling very long tabular materials. Example:

```
\begin{longtable}{lc}
\caption[]{LONG TABLE CAPTION \label{tab:longtable} }
\toprule
Heading 1 & Heading 2 \\
\midrule
\endfirsthead
\caption[]{ } \\ % doesn't matter what text is in the continued caption.
\midrule
Heading 1 & Heading 2 \\
\midrule
\endhead
\endfoot
\bottomrule
\endlastfoot
% Now the tabular material %
Long & Table etc. \\
\end{longtable}
```

• If a figure or table is very wide and will not fit on a page, use the landscape environment (from the included lscape package) to format them in landscape mode. They will automatically appear on a separate page. If you use

pdfIATEX to compile your document, then the included pdflscape package will flip this page on the screen for easier reading.

If the positioning of the landscape environment is inconvenient and leads to half-empty pages, the afterpage command, made available by the package with the same name, allows the text to flow around the landscape environment better:

```
\afterpage{%
  \begin{landscape}
    \centering
    \input{my_landscape_table}
  \end{landscape}
}
```

- The sidewaystable environment (from the included rotating package) is incompatible with the current class and should be avoided.
- Usually the width of the figure and table captions is 90% of the textwidth (i.e. 0.9\textwidth). If needed, the width can be changed on a case-by-case basis by doing one of the following:
 - Use a minipage environment of appropriate width and enclose your tabular or figure float inside it, or
 - set the \capwidth inside the table or the figure environment, and \LTcapwidth outside the longtable environment, e.g.,

- Use the tabularx environment for the actual formatting of the tables (within the table environment). It differs slightly from tabular environment and you should refer to their documentation in the TEXMF tree for more information.
- If you've used a longtable environment in your document, it might be necessary to compile the document multiple times so as to get proper alignment of columns. This is documented in the longtable manual.
- If you wish to use \footnotes in the longtable environment, please read its documentation. There are some handicaps present.

• To cite a website in your bibliography³, use the following format in your .bib file:

When processed with the nddiss2e.bst citation style file this gives: 111. N. Fairley. CasaXPS VAMAS processing software. Website. http://www.casaxps.com.

5.2 You Found Errors?

Errors in a LATEX document are to be expected. If you have a problem that is that seems to be more than a typo or unbalanced brace, it is possible that there is a conflict between the packages you have included and those that $\mathtt{NDdiss2}_{\mathcal{E}}$ uses. If you find yourself in that situtation, there is a mailing list for handling support issues with $\mathtt{NDdiss2}_{\mathcal{E}}$. Look through the archive, and if there are no answers, please send an email to $\mathtt{ND-LATEX-USERS@listserv.nd.edu}$ (registration required). The more effort you spend in isolating the problem or in troubleshooting will make it more likely that others can reproduce the problem and help you solve it. Also if you have a problem that you then solve, please also email the list. Your doing so will help the next person to have that problem, and will also make the maintainers aware of it, so future versions of the class file can be better.

6 Other Packages Used

A number of packages are required by default and must be present in your T_EX search path (if you use a package manager such as MiKTeX or TeXLive, it will take care of this for you). As far as possible, these have been tested for proper formatting style with the $NDdiss2_{\varepsilon}$ class file. The list includes ifthen, exscale, ifpdf, ifluatex, ifxetex, xspace, longtable, indentfirst, tabularx, showkeys, enumerate, latexsym. epsfig, color, graphicx, setspace⁴, amsmath, float, Iscape, rotating, booktabs, and natbib⁵. Sameer urges you to read the documentation of these packages available in the TEXMF tree, if you think you might use their features or want to tweak some advanced options. Of these packages, ifpdf, longtable, natbib, booktabs, rotating, and setspace are not part of the LATEX required distribution, so you may need to download them. They are all available through both MiKTeX and

³More info at http://www.tex.ac.uk/cgi-bin/texfaq2html?label=citeURL

 $^{^{4}}v6.7[2000/12/01]$ or above

 $^{^{5}}v8.31[2009/07/16]$ or above

TeXLive; note that ifpdf is part of the oberdiek bundle, which is what you need to download to get that package if it is not already installed on your system.

Other packages may or may not be appropriate for use with the $NDdiss2_{\varepsilon}$ class when producing copies to be submitted to the Graduate School. Please be careful when using packages that change the default fonts, or the page layout.

In general, the official guidelines of the Graduate School are followed to the maximum extent possible. This includes proper formatting of the title page and the abstract page (from the ndthesis package), numbering of the pages in the frontmatter, generation of properly formatted table of contents, list of figures etc., as well as bibliography at the end. Per the guide, the number of different fonts and font sizes used is kept to a minimum. The contents, all lists and the bibliography are single-spaced but the inter-line spacing for the rest of the document is double.

6.1 Generating PDF document

The $\mathtt{NDdiss2}_{\mathcal{E}}$ class also allows production of pdf documents with \mathtt{pdfI} *TEX . As of Spring 2013, this is the preferred method of compilation. In this case, the hyperref and $\mathtt{pdflscape}$ packages are also required. The hyperref package ensures that the generated pdf document contains internal as well as external links for citations and bookmarks. A document produced by this method also contains embedded fonts (press quality pdf) and is suitable for electronic submission to the library and for microfilm archiving. Although the most appropriate options for hyperref are passed on, for advanced features refer to its documentation. The pdflscape package flips pages with landscape orientation in the pdf file for easier reading, but the location of the page numbers does not change.

Figures must be in pdf, jpeg, png, or gif format, and not in encapsualted postscript (eps). An easy way to convert *eps* files to *pdf* files is to use the utility epstopdf or eps2pdf, which should be available on your unix-like distribution already (should you have one). It is also possible to convert your eps files to pdfs using an online conversion tool. Searching for "eps to pdf" brought up several free options in Fall 2012.

7 The Implementation

Following is our attempt at documenting the source of the NDdiss 2ε class file for the TFX hackers.

At the start, we define the base version of LATEX 2ε needed and the label information for the NDdiss 2ε class.

```
1 \NeedsTeXFormat{LaTeX2e}[1999/12/01]
2 \ProvidesClass{nddiss2e}
3       [2016/10/16 v3.2016%
4         Notre Dame Dissertation document class]
5 %
```

\dissfileversion \dissfiledate

The \dissfileversion and \dissfiledate macros contain the version and the date of the release.

```
6 \providecommand{\dissfileversion}{3.2017.2}
7 \providecommand{\dissfiledate}{2017/05/09}
8 7
```

New boolean variables for the options used in $NDdiss2_{\varepsilon}$ class are set here with default values.

```
9 \newif\ifdiss@draft
                                   \diss@drafttrue
10 \newif\ifdiss@review
                                   \diss@reviewfalse
11 \newif\ifdiss@final
                                   \diss@finalfalse
12 \newif\ifinfo@page
                                   \info@pagetrue
13 \newif\ifadvisors@two
                                   \advisors@twofalse
14 \newif\ifdiss@dedication
                                   \diss@dedicationfalse
15 \newif\ifnum@refs
                                    \num@refstrue
                                   \natbib@refstrue
16 \newif\ifnatbib@refs
17 \newif\ifcentered@chaptitle
                                   \centered@chaptitletrue
18 \newif\if@ltfirstcaption
19 %
```

draft review final

Exactly one of these options must be present in order to get a proper document. These options set appropriate boolean variables (flags) and pass some common options to the parent book class.

```
20 \DeclareOption{draft}{
21
      \setlength\overfullrule{5pt}
22
      \typeout{DRAFT MODE}\typeout{}\info@pagefalse%
      \diss@drafttrue\diss@reviewfalse\diss@finalfalse
23
      \PassOptionsToClass{letterpaper,oneside,draft}{book} }
^{24}
25 %
26 \DeclareOption{review}{
      \typeout{REVIEW MODE}\typeout{}\info@pagetrue%
27
28
      \diss@draftfalse\diss@reviewtrue\diss@finalfalse
29
      \PassOptionsToClass{12pt,letterpaper,oneside,final}{book} }
30 %
31 \DeclareOption{final}{
```

```
\setlength\overfullrule{0pt}
              32
              33
                     \typeout{FINAL MODE}\typeout{}\info@pagetrue%
                     \diss@draftfalse\diss@reviewfalse\diss@finaltrue
              34
                     \PassOptionsToClass{12pt,letterpaper,oneside,final}{book} }
              35
              36 %
              The options numrefs or textrefs select the appropriate citation style i.e. "numbered"
    numrefs
              or "textual", respectively. By choosing textrefs, one can get "author-date" style of
   textrefs
              citation in the text. The default is numrefs.
              37 \DeclareOption{numrefs}{
                  \typeout{NUMBERED REFERENCES}\num@refstrue}
              39 \DeclareOption{textrefs}{
                  \typeout{TEXTUAL REFERENCES}\num@refsfalse}
              41 \DeclareOption{nonatbib}{
                  \typeout{NO NATBIB}\natbib@refsfalse}
              The option nocenter allows non-centered chapter titles.
              43 \DeclareOption{nocenter}{\centered@chaptitlefalse}
              44 %
              The openbib option is useful in creating indented bibliography. Usually you would
              not need to use this option since the default layout of the bibliography is very much
              acceptable.
              45 \DeclareOption{openbib}{%
                    \PassOptionsToPackage{openbib}{natbib}
              46
              47 }
              48 %
              The sort option is passed to natbib, and causes multiple citations to be listed in the
              sequence they appear in the bibliography.
              49 \DeclareOption{sort}{%
                     \PassOptionsToPackage{sort}{natbib}
              50
              51 }
              52 %
              The compress option is passed to natbib, and causes numerical citations to be compressed
              so that, e.g. 1,2,3 becomes 1-3. Does not also sort.
              53 \DeclareOption{compress}{%
                     \PassOptionsToPackage{compress}{natbib}
              54
              55 }
              56 %
              The sort&compress option sorts numerical citations, and then compresses them.
              57 \DeclareOption{sort&compress}{%
                     \PassOptionsToPackage{sort&compress}{natbib}
              58
              59 }
              60 %
              The other options are declared in the following lines.
             The twoadvisors option sets the flag for modifying the layout of the title page.
twoadvisors
              61 \DeclareOption{twoadvisors}{\typeout{TWO ADVISORS}\typeout{}%
              62
                     \advisors@twotrue}
              63 %
```

```
The options 10pt, 11pt or 12pt are passed on to the book class if appropriate, depending
11pt
      on whether the \diss@draft flag is set true.
12pt
      64 \DeclareOption{10pt}{%
      65 \ifdiss@draft%
           \PassOptionsToClass{10pt}{book}%
          \else%
           \OptionNotUsed%
      68
           \ClassWarningNoLine{nddiss2e}%
      69
             {Font size 10pt not allowed; using 12pt}%
      70
      71 \fi%
      72 }
      73 \DeclareOption{11pt}{%
      74 \ifdiss@draft%
          \PassOptionsToClass{11pt}{book}%
      75
      76
           \OptionNotUsed%
      77
           \ClassWarningNoLine{nddiss2e}%
      78
      79
             {Font size 11pt not allowed; using 12pt}%
      80 \fi
      81 }
      82 \DeclareOption{12pt}{%
            \PassOptionsToClass{12pt}{book}%
      83
      84 }
      85 %
      86 \DeclareOption{noinfo}{\info@pagefalse}
```

The twoside option is for when you want to prepare a two-sided document for your own use. The only difference from the one-sided document is in the page layout. This option is passed on to the parent book class.

```
88 \DeclareOption{twoside}{\typeout{TWO SIDED DOCUMENT}% 89 \PassOptionsToClass{twoside}{book} }% 90 %
```

All options other than those defined above are ignored and a warning is printed on the screen during compile-time. After processing all the options, the book class is loaded with the specified options.

```
91 \DeclareOption*{\ClassWarning{nddiss2e}%

92 {UnknownOption '\CurrentOption'} }%

93 \ProcessOptions\relax

94 \LoadClass{book}

95 %
```

At this stage, the packages ifthen, exscale, etoolbox ifpdf, ifluatex, ifxetex, longtable, xspace, indentfirst, tabularx, enumerate and latexsym are loaded. It is important to load these in a specific order so as not to cause conflicts in definitions of certain macros.

```
96 \RequirePackage{ifthen,exscale,etoolbox,xpatch}
97 \RequirePackage{ifpdf,ifluatex,ifxetex}
98 \RequirePackage[
99 plainpages=false,
```

```
pdfpagelabels,
100
     bookmarks=true,%
101
     bookmarksnumbered=true,%
102
     linktocpage=true,%
103
104
     breaklinks=true,%
     bookmarkstype=toc,%
105
106
     colorlinks=false,%
107
     pdfpagemode=UseOutlines]{hyperref}
108 \RequirePackage{longtable}
109 \RequirePackage[flushleft]{threeparttable}
110 \RequirePackage[flushleft]{threeparttablex}
111 \RequirePackage{xspace}
112 \RequirePackage{indentfirst}
113 \RequirePackage{tabularx}
114 \RequirePackage{enumitem}
115 \RequirePackage{latexsym}
116 \RequirePackage{textcase}
117 %
 If the \diss@final is set false (when using draft or review option) then the showkeys
 package is also loaded.
118 % \ifdiss@final\relax\else\RequirePackage{showkeys}\fi
119 %
 Depending in whether you are using pdfIATEX or plain IATEX, epsfig, color and graphicx
 are loaded with respective options.
120 \ifboolexpr{bool{luatex}}{%
     \ifcsdef{pdfadjustspacing}{}{%
121
        \let\pdfadjustspacing \adjustspacing
122
     }
123
124 }{}
125 \ifboolexpr{bool{pdf} or bool{xetex} or bool{luatex}}{%
     \RequirePackage{epsfig}
126
     \RequirePackage{color}
127
     \RequirePackage{graphicx}
128
     \AtBeginDocument{
129
130
     \pdfadjustspacing=1
131
132 }{%
     \RequirePackage[dvips]{epsfig}
133
     \RequirePackage[dvips]{color}
134
     \RequirePackage[dvips]{graphicx}
135
136 }
137 %
```

Now the natbib package is loaded with its options, appropriate to numrefs or textrefs class option. If numrefs is specified, then natbib is read-in with its options for "numbered" references and sorted & compressed (eg. [3-6,8-10]). In this case, the default delimiter is square brackets and the default seperator is a comma. For the textrefs option, the natbib package is read-in so as to sort the references in an "author-date" style of citations. The default delimiter and seperator, in this case, are round brackets and

```
colon, respectively.

138 \ifnatbib@refs
139 \ifnum@refs
140 \RequirePackage[numbers] {natbib}
141 \else
142 \RequirePackage[authoryear] {natbib}
143 \fi
144 \fi
```

Additionally, the packages amsmath, float, booktabs, rotating, url and setspace are loaded when (pdf)LATEX processes \begin{document}. Again, the order of these packages is important. Additionally when using pdfLATEX, the package hyperref (for internal/external links in the document) is also loaded. The options for this package have been tested to produce a document which can be printed on laser printers without any problems because of colored link boxes. Megan added required package pdflscape, which is part of the oberdiek bundle in MiKTeX and TeXLive. Using this package will flip landscape pages on the screen so that it's easier to read.

```
145 \AtBeginDocument{
146 \RequirePackage{amsmath}
147 \RequirePackage{float}
148 \RequirePackage{booktabs}
149 \RequirePackage{rotating}
150 \RequirePackage{url}
151 \RequirePackage[doublespacing] {setspace} [2000/12/01]
152 \ifboolexpr{bool{pdf} or bool{xetex} or bool{luatex}}{%
153
     \ifluatex
        \RequirePackage[luatex]{pdflscape}
154
     \else
155
156
       \ifxetex
          \RequirePackage[xetex]{pdflscape}
157
       \else
158
          \ifpdf
159
            \RequirePackage{pdflscape}
160
          \fi
161
       \fi
162
163
     \fi
164 }{}
165 }
166 \RequirePackage{metalogo}
Set the \pagestyle for the document to plain here and define default spacing.
168 \AtBeginDocument{
169 \pagestyle{plain}
170 \normalspacing
171 \typeout{Pagestyle and spacing normal}
172 }
173 %
 Here, define some spacing macros for page layout and doublespacing.
```

174 \newcommand{\normalspacing}{\doublespacing}

```
175 \newcommand\single@baselinestretch{0.979}
176 \newcommand\double@baselinestretch{1.625}
177 \newlength{\usedtextsize}
178 \setlength{\usedtextsize}{\f@size pt}
179 \newlength{\single@skip}
180 \setlength{\single@skip}{\single@baselinestretch \usedtextsize}
181 \newlength{\double@skip}
182 \setlength{\double@skip}{\double@baselinestretch \usedtextsize}
183 \setlength{\footnotesep}{\double@skip}
184 %
```

Define new lengths for some variables for a proper layout of normal pages, pages with text and figures and pages with only floats. Note that although the geometry package is usually easier, when Megan tried to switch to that she discovered that something ends up overwriting it and, although the the showframe option showed that the margins were setting correctly, the text didn't look like they were. So these length values are set to what geometry said they should be to get a 1.5 in left margin and 1 in margins on all other sides (we'll use vspace commands later to get the 2 in top margin on pages where that's needed).

```
185 \setlength{\hoffset}{Opt}
                                                     186 \setlength{\voffset}{0pt}
                                                     187 \setlength{\topmargin}{-32pt}
                                                     188 \setlength{\headsep}{20pt}
                                                     189 \setlength{\marginparwidth}{47pt}
                                                     190 \setlength{\marginparsep}{7pt}
                                                     191 \setlength{\textheight}{648pt}
                                                     192 \setlength{\textwidth}{432pt}
                                                     193 \setlength{\oddsidemargin}{36pt}
                                                     194 \setlength{\evensidemargin}{36pt}
                                                     195 \setlength{\footskip}{30pt}
                                                     197 \setlength{\floatsep}{30pt}
                                                     198 \setlength{\intextsep}{50pt}
                                                     199 %
                                                     200 \newcommand{\clearemptydoublepage}{\newpage{\pagestyle{empty}%
                                                     201
                                                                               \cleardoublepage}}
                                                     202 %
                        \nddiss Define the macro \nddiss that is the logo used in the titlepage and the stamp in the
                                                        dissertation document.
                                                     203 \DeclareRobustCommand{\nddiss}{%
                                                     204
                                                                                            \textsf{{\scshape nd}diss}\kern-0.03em%
                                                     205
                                                                                            2$_\mathsf{\textstyle\varepsilon}$}
                                                     206 %
                               \work Here define new macros for use in the dissertation title page.
                  \degaward 207 \renewcommand{\title}[1]{\def\@title{#1}}
                     \label{lem:command} $$ \advisor $_{208} \me\mand{\work}[1]_{\def\@work{\#1}} $$
\verb|\scondadvisor||_{209} \\ \scondadvisor||_{209} \\ \scondadvisor||_{209} \\ \scondadvisor||_{209} \\ \scondadvisor||_{209}
```

 $\label{lem:command} $$ \displaystyle 210 \end{\advisor}[1]_{\def\@advisor\{\#1\}} $$$

\degdate

As a default, these macros have an empty argument. Only the \degdate macro takes on the current month-year combination in the absence of any assignation.

```
221 % Defaults are empty except the \degdate
     \title{}
222
     \author{}
223
    \work{}
224
    \degaward{}
225
    \advisor{}
226
227
    \ifadvisors@two \secondadvisor{} \fi
228
    \department{}
229 %
```

\@infopage

Define \@infopage macro that will create a page which contains important information about the document and the version of $NDdiss2\varepsilon$ used etc. for the end-user and the proofreader along with a standard disclaimer and details of where to find documentation for the $NDdiss2\varepsilon$ class file. This information can be suppressed by specifying the "noinfo" option while invoking the $NDdiss2\varepsilon$ class.

```
230 \DeclareRobustCommand{\@infopage}{
     \thispagestyle{empty}
231
     \null\vspace*{\single@skip}
232
233
     \begin{center}
       This \@work\space \\ entitled \\ \MakeTextUppercase{\@title} \\
234
           typeset with \nddiss\ v%
235
         \dissfileversion\ (\dissfiledate) %
236
237
         on \today\space for\\
238
     \@author\\
     \end{center}
239
240
      \normalfont\normalsize\singlespacing
241
242
      \noindent This \LaTeXe\space classfile conforms to the
243
244
      University of Notre Dame style guidelines as of Fall
      2012. However it is still possible to generate a
245
      non-conformant document if the instructions in the class
246
247
      file documentation are not followed!
248
      \begin{center}
249
250
      \begin{minipage}{0.75\textwidth}
251
      \noindent Be sure to refer to the published Graduate
```

```
as well. Those guidelines override everything mentioned
           253
                  about formatting in the documentation for
           254
                  this \nddiss\space class file.
           255
                  \end{minipage}
           256
           257
                  \end{center}
           258
           259
                 \noindent\itshape This page can be disabled by
                 specifying the ''{\upshape\ttfamily noinfo}'' option to the class invocation.
           260
                 \upshape
           261
           262 (i.e., {\ttfamily {\textbackslash} documentclass [\ldots, noinfo] \{nddiss2e\}}
           263)
           264
                 \begin{center}
                   {\bfseries\large\singlespacing This page is \slshape NOT
           265
                   \upshape part of the dissertation/thesis. It should be disabled before
           266
                  making final, formal submission, but should be included in the version
           267
                  submitted for format check.}
           268
                 \end{center}
           269
           270
                   \normalsize\normalfont
           271
                   \nddiss\ documentation can be found at these locations:
           272
                 \begin{center}
                   \url{http://graduateschool.nd.edu} \\
           273
                   \url{https://ctan.org/pkg/nddiss}
           274
                 \end{center}
           275
           276
           277 \vfill
           278 \normalfont\normalsize\normalspacing\eject}
\maketitle Redefine the macro \maketitle to set PDF metadata and produce the information page
            as well as the actual title page of the dissertation.
           280 \renewcommand{\maketitle}{
           281
                 \hypersetup{
           282
                     pdftitle={\@title},
                     pdfauthor={\@author},
           283
           284
                     pdfsubject={\@department}
           285
                 \ifinfo@page\@infopage\else\relax\fi%
           286
                 \clearemptydoublepage
           287
                 \normalfont\normalsize\normalspacing
 titlepage
            The structuring begins with checking the proper macros for obtaining correct formatting
            for the title page. If any of those are not defined, an error is issued and processing
            stopped. Most of the code for this was taken from the earlier ndthesis class and hence,
            the documentation is also picked from there.
                 \begin{titlepage}%
           289
           290 \ \texttt{\equal}(\texttt{\equal}{\classError} addiss2e)\%
                 {The \protect\work\space macro is undefined.\MessageBreak
           291
           292
                       The title page may be incorrectly formatted.}%
                 {Specify \protect\work\space as Dissertation or Thesis}}{\relax}
```

School guidelines at \url{http://graduateschool.nd.edu}

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```
294 \ifthenelse{\equal{\@degaward}{}}{\ClassError{nddiss2e}%}
     {The \protect\degaward\space macro is undefined.\MessageBreak
295
           The title page may be incorrectly formatted.}%
296
     {Specify \protect\degaward\space. It defines the awarded degree%
297
298
            (Ph.D., M.S., etc.)}}{\relax}
    ifthenelse{\equal{\@advisor}{}}{\ClassError{nddiss2e}%,
299
300
     {The \protect\advisor\space macro is undefined.\MessageBreak
301
           The title page may be incorrectly formatted.}%
     {Spepcify \protect\advisor\space It is who signs your walking papers!}}{\relax}
302
    ifthenelse{\equal{\@department}{}}{\ClassError{nddiss2e}%
303
304
     {The \protect\department\space macro is undefined.\MessageBreak
           The title page may be incorrectly formatted.}%
305
     {Specify which \protect\department\space is awarding your degree?}}{\relax}
306
307 \ifadvisors@two
     \ifthenelse{\equal{\@secondadvisor}{}}{\ClassError{nddiss2e}%
308
     {The \protect\secondadvisor\space macro is undefined.\MessageBreak
309
               The title page may be incorrectly formatted.}%
310
311
     {Use \protect\secondadvisor\space for your second advisor}}{\relax}
312 \fi
313 %
```

Now set up some skip registers to hold the inter-data spacing. The initial values will create a two-inch top margin for the title page, provided the title is only one line long. \skip1 is the primary internal spacing command; \skip2 is the spacing between the student's name and the line for the first adviser to sign if there are two advisers and \skip3 is the spacing between the student's name and the line for the adviser to sign if there is only one adviser; \skip4 controls the top margin. We'll account for titles longer than one line in a bit ...

```
314 \skip1=2.1\double@skip
315 \skip2=1.7\double@skip
316 \skip3=2.7\double@skip
317 \skip4=36pt
318 %
```

If the author has two advisors, we need to do a little tweaking to the internal spacing.

```
319 \ifadvisors@two
320 \skip1=1.6\double@skip
321 \else\relax
322 \fi
```

The 2012 formatting guidelines require the title to be 2" from the top of page. If it's more than one line long, we need to adjust the internal spacing:

```
\setbox0=\vbox{\MakeTextUppercase{\@title}}
    \ifdim \ht0 > 3\double@skip
324
325
      \advance \skip1 -.75\double@skip
    \else
326
      \ifdim \ht0 > 2\double@skip
327
        \advance\skip1 -.5\double@skip
328
329
      \else
330
        \ifdim \ht0 > \double@skip
331
          \advance\skip1 -.25\double@skip
```

```
332 \fi
333 \fi
334 \fi
```

Our default assumes a one-line degree field such as

Doctor of Philosophy

but we check to see if it is two or three lines long. If so, we need to remove those extra lines from the internal spacing.

```
\setbox1=\vbox{\@degaward}
335
    \ifdim \ht1 > 2\double@skip
336
      \advance\skip1 -.5\double@skip
337
338
    \else
      \ifdim \ht1 > \double@skip
339
        \advance \skip1 -.25\double@skip
340
      \else
341
        \relax
342
      \fi
343
344 \fi
```

If we have two advisers, a three or four line title, and a three line degree field or two advisers, a four line title, and a two line degree field, then we need to remove some spacing between the name and the first adviser and from the top margin, and give that space to the internal spacing.

```
\ifadvisors@two
345
        \ifdim \ht0 > 3\double@skip
346
347
          \ifdim \ht1 > \double@skip
348
            \advance \skip4 -.675\double@skip
            \advance \skip2 -.4\double@skip
349
            \verb|\advance \skip1 .25\\| double@skip|
350
351
          \else \relax
352
          \fi
353
          \ifdim \ht0 > 2\double@skip
354
            \ifdim \ht1 > 2\double@skip
355
              \advance \skip2 -.4\double@skip
356
              \advance \skip1 .1\double@skip
357
358
            \else \relax
            \fi
359
360
          \else \relax
361
          \fi
        \fi
362
     \else \relax
363
     \fi
364
 Finally we start putting the text in place . . . centered, of course.
365
     \null\vspace*{\skip4}
366
     \begin{center}%
        \MakeTextUppercase{\@title} \par%
367
368
        \vskip\skip1%
369 %
```

Now skip the required vertical space, declare that this is for the University of Notre Dame, and list what degree has been earned.

```
A \@work \par%
370
       \vskip\skip1%
371
372
         Submitted to the Graduate School \\
373
             of the University of Notre Dame \\
              in Partial Fulfillment of the Requirements \
374
             for the Degree of \par
375
            \vskip\skip1%
376
            \@degaward%
377
           \vskip\skip1%
378
379
           by \\%
380 %
Now format the author's name.
        \@author
381
```

```
382 %
```

Now skip the proper space and place the signature line for the advisor with his/her name typeset below it. This is accomplished by essentially centering a box that is twice as long as the required length of the signature line and placing the line in only the right-hand side.

```
383
        \ifadvisors@two
384
           \vskip\skip2
           \hspace*{2.75in}\underline{\hspace{2.75in}}\%
385
           \hspace*{2.75in}\@advisor, Co-Director\\
386
        \else
387
388
           \vskip\skip3
           \hspace*{2.75in}\underline{\hspace{2.75in}}\%
389
           \hspace*{2.75in}\@advisor, Director\\
390
391
392 %
```

If there is a second advisor, place that line here now.

```
393 \ifadvisors@two %
394 \vskip\double@skip%
395 \hspace*{2.75in}\underline{\hspace{2.75in}}\%
396 \hspace*{2.75in}\@secondadvisor, Co-Director\\
397 \fi
398 %
```

We end with the department and date; the internal spacing is chosen so that these are at the page bottom.

```
399 \vskip\skip1%
400 Graduate Program in \@department \\%
401 Notre Dame, Indiana \\
402 \@degdate
403 \end{center}
404 \end{titlepage}%
405 }
406 %
```

The environment copyrightpage defines the defaults for proper formatting the copyright copyrightpage page (if opted). 407 \newenvironment{copyrightpage}{% \clearemptydoublepage 408 409 \typeout{Copyright page} 410 \pagestyle{empty} \null\vfil 411 \begin{center}\normalspacing}% 412 413 { \end{center}\vfil\null \clearpage } 414 % \copyrightholder Define a few macros for defining the copyright holder and the year desired. By default, they are taken as the current year and the author of the dissertation. \copyrightyear 415 \newcommand{\@copyrightyear}{\the\year} 416 \newcommand{\@copyrightholder}{\@author} 417 \newcommand{\@copyrightlicense}{All Rights Reserved} 418 \newcommand{\copyrightyear}[1]{\renewcommand{\@copyrightyear}{#1}} 419 \newcommand{\copyrightholder}[1]{\renewcommand{\@copyrightholder}{#1}} 420 \newcommand{\copyrightlicense}[1]{\renewcommand{\@copyrightlicense}{#1}} 421 % \makecopyright Finally, the \makecopyright macro creates the copyright page as per defined in the copyrightpage environment. 422 \newcommand{\makecopyright}{% \ifdiss@final 423424 \begin{copyrightpage} \normalfont\normalsize 425 \copyright\space Copyright by \\ 426 \@copyrightholder \\ 427 428 \@copyrightyear\\ \@copyrightlicense \\[10mm] 429 \end{copyrightpage} 430 431 \fi 432 }% 433 % \makepublicdomain Or, if chosen, \makepublicdomain macro creates a copyright page (using earlier copyrightpage environment) that puts the document in public domain. 434 \newcommand{\makepublicdomain}{% \ifdiss@final 435 \begin{copyrightpage} 436 This document is in the public domain. 437 \end{copyrightpage} 438

\fi

439 440 }% 441 %

Define some new name macros and redefine other name macros as below. These are the names of the respective sections in your dissertation document. If there's a need to change any name, you must use a similar command in the preamble of your document.

```
442 \providecommand{\abstractname}{Abstract}
443 \providecommand{\dedicationname}{\mbox{}}
444 \providecommand{\prefacename}{Preface}
445 \providecommand{\acknowledgename}{Acknowledgments}
446 \providecommand{\symbolsname}{Symbols}
447 \renewcommand{\tablename}{Table}
448 \renewcommand{\figurename}{Figure}
449 \renewcommand{\partname}{Part}
450 \renewcommand{\chaptername}{Chapter}
451 \renewcommand{\appendixname}{Appendix}
452 \renewcommand{\contentsname}{Contents}
453 \renewcommand{\listfigurename}{Figures}
454 \renewcommand{\listtablename}{Tables}
455 \renewcommand{\bibname}{Bibliography}
456 \renewcommand{\indexname}{Index}
457 %
This environment is adapted from the report class since the book class does not have one.
 Additionally, we add a \pdfbookmark for the abstract in the pdf document.
458 \newenvironment{abstract}{%
     \ifboolexpr{bool{pdf} or bool{xetex} or bool{luatex}}{%
459
         \pdfbookmark[0]{\abstractname}{abstract}%abstract.0
460
461
462
     \typeout{Abstract page(s)}
     \renewcommand{\@oddfoot}{\@empty}
463
     \renewcommand{\@evenfoot}{\@empty}
464
 If the abstract extends to a second page, place the author's name in top right corner of
 that page. Make sure it's upright, as required by the University and that this appears
 at 0.75'' from the top.
465
     \let\@evenhead\@oddhead
466
     \renewcommand{\@oddhead}{\hfil{\upshape\@author}}
467
     \titlepage
468
     \null
     \begin{center}
469
     \vspace*{36pt}
470
     {\normalsize\mdseries \normalspacing
471
472
         \MakeTextUppercase{\@title} \\[3.5ex]
        \normalsize\abstractname \\ by \\ \@author\space}%
473
      \@endparpenalty \@M
474
      \end{center}\par}%
475
476 {\par\vfil\null\endtitlepage}
```

477 %

dedication The dedication environment is similar to the abstract environment. This page is numbered 2 and the subsequent pages are numbered accordingly. A pdfbookmark is not created because of a reported issue that Adobe products have with pdfbookmarks containing an

```
478 \newenvironment{dedication}{%
     \global\diss@dedicationtrue
```

```
480 \typeout{Dedication page}
481 \chapter*{\dedicationname}%
482 \thispagestyle{plain}
483 \setcounter{page}{2}
484 \null\centering}
485 {\par\null\clearpage}%
486 %
```

\tableofcontents

The \tableofcontents macro is redefined to begin at page 2 if the dedication environment does not exist. It is single-spaced.

```
487 \renewcommand\tableofcontents{%
     \ifdiss@dedication\relax\else\setcounter{page}{2}\fi
     \chapter*{\contentsname}%
489
     \ifboolexpr{bool{pdf} or bool{xetex} or bool{luatex}}{%
490
         \pdfbookmark[0]{\contentsname}{contents}%contents.0
491
     }{}
492
     \singlespacing
493
494
     \@starttoc{toc}%
     \normalspacing
496
     }
497 %
```

\listoffigures \listoftables

These macros are modified to add the \listfigurename and \listoftables to the Table of Contents. Both of these are also single spaced. The inter-entry spacing is changed by adding a \vskip after each entry. This is done in the figure and table environments later.

```
498 \renewcommand\listoffigures{%
       \chapter*{\listfigurename}%
499
       \addcontentsline{toc}{chapter}{\listfigurename}%
500
       \typeout{List of figures - \listfigurename}
501
       \singlespacing
502
       \@starttoc{lof}%
503
504
       \normalspacing
505 }
506 %
507 \renewcommand\listoftables{%
       \chapter*{\listtablename}%
508
509
       \addcontentsline{toc}{chapter}{\listtablename}%
       \typeout{List of tables - \listtablename}
510
       \singlespacing
511
       \@starttoc{lot}%
512
       \normalspacing
513
514 }
515 %
```

 $\begin{array}{c} & \texttt{preface} \\ \texttt{acknowledgement} \end{array}$

These environments are similar to the dedication environment. They are defined as \chapter*{} so they are not numbered and not added to Table of Contents and so, add that manually by using \addcontentsline.

```
516 \newenvironment{preface}{%
517 \typeout{Preface page}
```

```
\chapter*{\prefacename}
               518
                    \addcontentsline{toc}{chapter}{\prefacename}%
               519
               520 }%
               521 {\par\null\clearpage}%
               522 %
               523 \newenvironment{acknowledge}{%
               524
                    \typeout{Acknowledgment page}
                    \chapter*{\acknowledgename}
               525
                    \addcontentsline{toc}{chapter}{\acknowledgename}%
               526
               527 }%
               528 {\par\null\clearpage}%
               529 %
               Allows the user to create unnumbered chapters that appear in the TOC.
\unnumchapter
               530 \newcommand\unnumchapter[1]{%
                    \chapter*{#1}%
               531
                    \addcontentsline{toc}{chapter}{#1}}
      symbols Define symbols environment which lays out it as a \chapter* and adds \symbolsname
               to the TOC. The environment is actually a horizontally centered longtable environment.
                To aid entry of a symbol and its definition, \sym macro command is also defined.
               533 \newcommand{\sym}[2]{\ensuremath{#1} & #2 \\}
               534 \newenvironment{symbols}[1][rl]{%
               535
                    \typeout{Symbols page}
                    \chapter*{\symbolsname}%
               536
                    \addcontentsline{toc}{chapter}{\symbolsname}%
               537
                    \begin{center}\begin{longtable}{#1}}%
               538
               539 {\end{longtable}\end{center}\par\null}
               540 %
                Modify chapter definition in \@chapter to put the word "Chapter" (\@chapapp) in the
                Table of Contents. That is, now the TOC will contain "Chapter 1: First chapter" rather
                than "1. First chapter." The rest of the format code is essentially the same as that in
                the book class.
               541 \def\@chapter[#1]#2{
               542
                    \ifnum \c@secnumdepth >\m@ne
               543
                    \if@mainmatter
                       \refstepcounter{chapter}%
               544
                       \typeout{\MakeTextUppercase{\@chapapp\space\thechapter.}}%
               545
                       \addcontentsline{toc}{chapter}%
               546
                         {{\@chapapp\ \thechapter: #1}}%
               547
               548
                       \else
                         \addcontentsline{toc}{chapter}{#1}%
               549
                       \fi
               550
               551
                    \else
                        \addcontentsline{toc}{chapter}{#1}%
               552
                    \fi
               553
                    \chaptermark{#1}%
               554
               555
                    \addtocontents{lof}{\protect\addvspace{10\p0}}%
                    \addtocontents{lot}{\protect\addvspace{10\p0}}%
```

```
557 \@makechapterhead{\MakeTextUppercase{#2}}%
558 \@afterheading }%
559 %
```

Modify part definition in \@part and \@spart to keep the font size for part headings \normalsize and \mdseries. It is otherwise the same as in the book class.

```
560 \def\@part[#1]#2{%
     \ifnum \c@secnumdepth >-2\relax
561
       \refstepcounter{part}%
562
       \addcontentsline{toc}{part}{\partname\ \thepart:\hspace{1em}#1}%
563
564
     \else
       \addcontentsline{toc}{part}{#1}%
565
566
     \fi
     \markboth{}{}%
567
     {\centering
568
      \interlinepenalty \@M
569
570
      \normalfont
571
      \ifnum \c@secnumdepth >-2\relax
        \normalsize\mdseries \MakeTextUppercase{\partname}\nobreakspace\thepart
572
573
        \par
        \vskip 20\p0
574
575
     \normalsize\mdseries \MakeTextUppercase{#2}\par}%
576
     \@endpart}
577
578 \def\@spart#1{%
       {\centering
579
580
        \interlinepenalty \@M
        \normalfont
581
582
        \normalsize\mdseries #1\par}%
583
       \@endpart}
584 %
```

Now format section headings to conform to the official guidelines.

\@makechapterhead

First, modify the chapter heading label to be normalsize'd and centered. Instead of the bold-faced heading label, also make it \mdseries. If we are in the \mainmatter, we add "CHAPTER" and chapter number before actually putting the chapter name otherwise only the "chapter name" is put. Note that chapter/section headings must all be double-spaced.

```
585 \renewcommand{\@makechapterhead}[1]{%
     \vspace*{30pt}%
586
     {\parindent \z@ \raggedright
587
       \ifnum \c@secnumdepth >\m@ne
588
         \normalfont\normalsize%
589
         \if@mainmatter
590
           \ifcentered@chaptitle\center\else\relax\fi%
591
           \MakeTextUppercase{\@chapapp{} \thechapter}\par\nobreak
592
         \fi
593
594
       \interlinepenalty\@M
595
       \ifcentered@chaptitle\center\else\relax\fi%
596
```

```
597 \mdseries{#1}\par\nobreak
598 \vskip 30\p@
599 }}
600 %
```

\@makeschapterhead

Make the TOC, LOF, LOT and other \chapter* headings in normal size, and \mdseries by modifying the macro \@makeschapterhead. Although these heading labels usually fit in a single-line, we copy the formatting for the chapter heading label (single-spacing) and make the spacing double again for the text.

```
601 \renewcommand{\@makeschapterhead}[1]{%
602
     \vspace*{30pt}%
     {\parindent \z@ \raggedright
603
        \normalfont\normalsize%
604
        \interlinepenalty\@M
605
        \ifcentered@chaptitle\center\else\relax\fi
606
        \mdseries{\MakeTextUppercase{#1}}\par\nobreak
607
        \ \vskip 30\p@
608
     }}
609
610 %
```

Now, set the section labels to \mdseries rather than bold-faced. We also make sure that these are set in normal spacing, font and size. This is done for each of \section, \subsubsection, \subsubsection, \paragraph and \subparagraph.

```
611 \renewcommand\section{\suppressfloats[t]%
       \@startsection {section}{1}{\z@}%
612
       {-4.2ex \@plus -1ex \@minus -.2ex}%
613
614
       {1.8ex \@plus.2ex}%
615
       {\normalfont\normalsize\mdseries} }
616 \renewcommand\subsection{\suppressfloats[t]%
       \@startsection{subsection}{2}{\z@}%
617
       {-3.9ex\@plus -1ex \@minus -.2ex}%
618
       {1.2ex \@plus .2ex}%
619
620
       {\normalfont\normalsize\mdseries} }
621 \renewcommand\subsubsection{\suppressfloats[t]%
       \@startsection{subsubsection}{3}{\z@}%
622
623
       {-3.9ex}\ -1ex \@minus -.2ex}%
       {1.2ex \@plus .2ex}%
624
       {\normalfont\normalsize\mdseries} }
625
626 \renewcommand\paragraph{%
627
       628
       {3.9ex \@plus1ex \@minus.2ex}%
629
       {\normalfont\normalsize\mdseries} }
630
631 \renewcommand\subparagraph{%
       \@startsection{subparagraph}{5}{\parindent}%
632
       {3.9ex \@plus1ex \@minus .2ex}%
633
634
       {-1em}%
       {\normalfont\normalsize\mdseries} }
635
636 %
```

\lambda Modify the macro \lambda part that formats part titles in the contents-like files (.toc, .lof and .lot) by adding a \@dottedtocline macro. The indent width is set to 1.5em to line up a continued line with the section number below it. We also leave less space between each part and the last section entry than the default and don't change the font.

```
637 \renewcommand*\l@part[2]{%
638
    \ifnum \c@tocdepth >-2\relax
      \addpenalty{-\@highpenalty}%
639
      \setlength\@tempdima{1.5em}%
640
      \begingroup
641
        {\leavevmode
642
         643
        }\par
644
         \nobreak
645
           \global\@nobreaktrue
646
647
           \everypar{\global\@nobreakfalse\everypar{}}%
      \endgroup
648
    fi
649
650 %
```

 $\label{local_local} \$

Modify the macro \lambdacetatta formats chapter titles in the contents-like files (.toc, .lof and .lot) by adding a \@dottedtocline macro. The indent width is set to 1.5em - to line up a continued line with the section number below it. We also leave less space between each chapter and the last section entry than the default.

```
651 \renewcommand*{\l@chapter}[2]{%
     \addpenalty{-\@highpenalty}%
652
     \setlength\@tempdima{1.5em}%
653
     \begingroup \leavevmode
654
     \cline{1}{0pt}{\cline{1}{41}{\#2}}
655
656
     \penalty\@highpenalty
657
658
     \endgroup
659 }
660 %
```

\thesubsubsection

We increase the number of section-depth by 1 and force subsubsection entry in the TOC by increasing the \tocdepth. In addition, the label number of \subsubsection is defined to be similar to that for \subsection i.e. all arabic numerals.

```
661 \addtocounter{secnumdepth}{1}
662 \addtocounter{tocdepth}{1}
663 \renewcommand{\thesubsubsection}{%
664 \thesubsection.\arabic{subsubsection}}
665 %
```

quote Redefine the **quote** environment to be single-spaced instead of being same as the rest of the text.

```
666 \renewenvironment{quote}
667 {\list{}\rightmargin\leftmargin}%
668 \singlespacing
669 \item\relax}
```

```
671 %
                      Have singlespaced items in lists.
                     672 \AtBeginEnvironment{itemize}{\par\singlespacing}
                     673 \AtBeginEnvironment{enumerate}{\par\singlespacing}
                     674 \AtBeginEnvironment{description}{\par\singlespacing}
                     675 \AtBeginEnvironment{tablenotes}{\footnotesize}
                     676 \t \TPTdoTablenotes}{\t \ensep\20}{\t \ensep\10pt}{}{}
                     677 \xpatchcmd{\TPTdoTablenotes}{\itemindent\z@}{\itemindent18pt}{}}
                      Set some lengths that are used in the table and the figure environments. Note that we
                      set the caption width (\capwidth) to be 90% of the \textwidth.
                     678 \setlength\abovecaptionskip{20\p@}
                     679 \newlength\capwidth
                     680 \stlength{\capwidth}{0.90\textwidth}
                     681 \newlength\abovetableskip
                     682 \newlength\belowtableskip
                     683 \newlength\abovefigureskip
                     684 \newlength\belowfigureskip
                     685 \setlength\abovetableskip\belowcaptionskip
                     686 \setlength\belowtableskip\abovecaptionskip
                     687 \setlength\abovefigureskip\abovecaptionskip
                     688 \setlength\belowfigureskip\belowcaptionskip
                      For the figure environment, first some skip lengths are set, then use \@makefigurecaption
             figure
                      to format the captions instead of the default \@makecaption, since the layout is different
                      for figure and the table environment. Further add a \vskip to each entry in .lof file
                      so that the inter-caption spacing seems double-spaced.
                     690 \renewenvironment{figure}{%
                            \setlength{\abovecaptionskip}{\abovefigureskip}
                     691
                     692
                            \setlength{\belowcaptionskip}{\belowfigureskip}
                            \let\@makecaption\@makefigurecaption
                            \@float{figure}}%
                     694
                     695
                            {%
                            \addtocontents{lof}{ {\vskip 0.4em} }%
                     696
                            \end@float%
                     697
                     698 }
                     699 %
\@makefigurecaption
                     The \@makefigurecaption is defined to format the caption in a parbox with width equal
                      to \capwidth and is formatted in single-spacing. The interline-spacing is then changed
                      to double after the caption.
                     700 \long\def\@makefigurecaption#1#2{%
                     701
                           \vskip\abovecaptionskip
                           \begin{center}
                     702
                           \parbox{\capwidth}{
                     703
                             \centering\singlespacing
                     704
```

670

705

{#1}. {#2}%\par

{\endlist}

```
706 \vskip\belowcaptionskip\normalspacing }%
707 \end{center}
708 }%
709 %
```

After setting the above and below skip lengths, the table environment is set to be single spaced. However, to obtain double-spacing between the entries, redefine the \arraystretch to be equivalent to the \double@baselinestretch. This way, while there are double-spaced entries, the entry itself is single-spaced. Similar to that in \@makefigurecaption, a \vskip is added to each entry in the .lot file.

```
710 \renewenvironment{table}[1][tbp]{%
      \setlength{\abovecaptionskip}{\abovetableskip}
711
712
      \setlength{\belowcaptionskip}{\belowtableskip}
      \renewcommand{\arraystretch}{\double@baselinestretch}
713
      \let\scaption\caption%
714
      \renewcommand*{\caption}[2][]{%
715
        \left\{ \left( \#1\right) \right\} 
716
           \def\shortcaption{##2}%
717
718
        }{%
           \def\shortcaption{##1}%
719
        }%
720
        \scaption[\shortcaption]{\MakeTextUppercase{##2}}%
721
722
723
      \let\@makecaption\@maketablecaption
      \@float{table}[#1]%
724
      \singlespacing%
725
      }%
726
      {%
727
      \addtocontents{lot}{ {\vskip 0.4em} }%
728
729
      \end@float%
730 }
731 %
```

\Constant The \Constant Constant in separate lines and with normal-spacing (double-spaced).

```
732 \long\def\@maketablecaption#1#2{
     \vskip\abovecaptionskip
733
     \begin{center}
734
       \makebox[\linewidth]{
735
736
         \parbox{\capwidth}{
737
         \centering\normalspacing
         \MakeTextUppercase{#1}\\[\single@skip]
738
739
         {#2}%\par
       \vskip\belowcaptionskip }%
740
       }%
741
     \end{center}
742
743 }
744 %
```

\longtable Similar to the table environment, the longtable environment is made singly-spaced but

```
the \arraystretch is made equal to double the baselinestretch.
                 745 \renewcommand\longtable{%
                 746
                        \singlespacing
                        \renewcommand{\arraystretch}{\double@baselinestretch}
                 747
                 748
                        \begingroup
                        \@ltfirstcaptiontrue
                 749
                        \@ifnextchar[\LT@array{\LT@array[x]}}
                 750
                 751 %
  \endlongtable
                 This bit is taken from longtable.sty. In order to obtain double-spacing in the list of
                  tables, a \vskip of 0.4em is added to .lot file.
                 752 \renewcommand\endlongtable{%
                       \crcr
                 753
                 754
                       \noalign{%
                         \let\LT@entry\LT@entry@chop
                 755
                         \xdef\LT@save@row{\LT@save@row}}%
                 756
                       \LT@echunk
                 757
                       \LT@start
                 758
                       \unvbox\z@
                 759
                       \LT@get@widths
                 760
                 761
                       \if@filesw
                         {\let\LT@entry\LT@entry@write\immediate\write\@auxout{%
                 762
                           \gdef\expandafter\noexpand
                 763
                 764
                              \csname LT@\romannumeral\c@LT@tables\endcsname
                 765
                                {\LT@save@row}}}%
                       \fi
                 766
                 767
                       \ifx\LT@save@row\LT@@save@row
                 768
                       \else
                 769
                         \LT@warn{Column \@width s have changed\MessageBreak
                                   in table \thetable}%
                 770
                         \LT@final@warn
                 771
                       \fi
                 772
                       \endgraf\penalty -\LT@end@pen
                 773
                       \label{lot} $$ \add to contents {lot} { \vskip 0.4em} } %
                 774
                       \endgroup
                       \global\@mparbottom\z@
                 776
                       \pagegoal\vsize
                 777
                       \verb|\endgraf| penalty z@\addvspace\LTpost|
                 778
                       \verb|\ifvoid\footins\else| insert\footins{} \fi
                 779
                 780 }
                 781 %
\LT@makecaption For the longtable environment, the \LTcapwidth is set equal to \capwidth. In order to
                  obtain consistent table captions, the command \LT@makecaption is modified in a similar
                  manner as \maketablecaption.
                 782 \setlength{\LTcapwidth}{\capwidth}
                 783 \renewcommand\LT@makecaption[3]{%
                       \LT@mcol\LT@cols c{\hbox to\z@{\hss\parbox[t]\LTcapwidth{%
                 784
                 785
                       \vskip\abovetableskip%
                 786
                         \centering\normalspacing
```

```
\if@ltfirstcaption
             787
                     #1{\MakeTextUppercase{#2} }\\[\single@skip]
             788
                     \MakeTextUppercase{#3}\par
             789
             790
                     #1{\MakeTextUppercase{#2 (continued)} }\par
             791
             792
                     \fi
             793
                   \global\@ltfirstcaptionfalse
                   \endgraf\vskip\belowtableskip}%
             794
                   hss}
             795
             796 %
    \timenow This macro is used in making the \draftheader and \reviewheader below. It outputs
              time in HH:MM format.
             797 \newcommand\timenow{%
                   \@tempcnta=\time \divide\@tempcnta by 60 \number\@tempcnta:\multiply
             798
                   \@tempcnta by 60 \@tempcntb=\time \advance\@tempcntb by -\@tempcnta
             799
                   \ifnum\@tempcntb <10 0\number\@tempcntb\else\number\@tempcntb\fi}
             800
             801 %
              This header is used in the dissertation document when the draft or review option is
\diss@header
              used. These headers serve as a note for the date and time of the document compilation.
             802 \newcommand{\diss@header}{%
                     \ifdiss@review Review \else Draft \fi document [\today\/ at \timenow\/]
             803
             804
                     }%
             805 %
              The header prepared above is put in the document by modifying the plain and empty
              pagestyles except when the final option is chosen.
             806 \ifdiss@final
             807
                     \renewcommand{\ps@plain}{
                         \renewcommand{\@oddhead}{\@empty}
             808
                         \renewcommand{\@oddfoot}{\hfil\thepage\hfil}
             809
                         \let\@evenhead\@oddhead
             810
                         \let\@evenfoot\@oddfoot
             811
                     }%
             812
             813 \else
             814
                     \renewcommand{\ps@plain}{
                         \renewcommand{\@oddhead}{\framebox[\textwidth]{
             815
                            \centering\footnotesize\tt\diss@header}}%
             816
                         \renewcommand{\@oddfoot}{\hfil\textrm{\thepage}\hfil}
             817
                         \let\@evenhead\@oddhead
             818
                         \let\@evenfoot\@oddfoot
             819
                     }%
             820
                     \renewcommand{\ps@empty}{
             821
                         \renewcommand{\@oddhead}{\framebox[\textwidth]{
             822
                            \centering\footnotesize\tt\diss@header}}%
             823
             824
                         \renewcommand{\@oddfoot}{\@empty}
                         \let\@evenhead\@oddhead
             825
             826
                         \let\@evenfoot\@oddfoot
                     }%
```

827

```
828 \fi
829 %
```

\bibsection By redefining \bibsection macro, add the \bibname to the table of contents and as a chapter heading for the bibliography.

```
830 \ifnatbib@refs
831
     \renewcommand{\bibsection}{
832
        \chapter*{\bibname}%
       \addcontentsline{toc}{chapter}{\bibname}%
833
    }%
834
835 \fi
836 %
```

\bibfont Changed the \bibfont macro to obtain single-spacing within each bibliographic entry. Between different entries, it is still \normalspacing. In addition, when the numrefs option is selected, the \@biblabel is redefined to number the bibliographic entries as 1. xxxx instead of the default [1] xxxx.

```
837 \ifnatbib@refs
     \renewcommand{\bibfont}{\singlespacing}
838
839
     \ifnum@refs
       \renewcommand{\@biblabel}[1]{\hfill#1.\hfill}
840
     \fi
841
842\fi
843 %
```

Lastly, after the bibliography in the final document, add a framed box which contains a blurb about the typesetting program and $NDdiss2_{\varepsilon}$ version used for preparing the dissertation document.

```
844 \ifdiss@final
845 \AtEndDocument{
       \vfill
846
        \centering\singlespacing
847
        \framebox[0.85\textwidth]{
848
       \begin{minipage}{0.80\textwidth}\footnotesize%
849
       \centering \itshape This document was prepared \& typeset with
850
851
        \upshape
852
       \ifluatex
         \LuaLaTeX
853
       \else\ifxetex
854
         \XeLaTeX
855
       \else\ifpdf
856
         pdf\LaTeX
857
858
        \else
         \LaTeXe
859
        \fi\fi\fi
860
861
       \itshape , and
       formatted with \upshape\nddiss\xspace\itshape classfile
862
        (v\dissfileversion [\dissfiledate])
863
864
        \end{minipage} }
865
        \clearpage}
```

```
866 \else\relax\fi
867 %
868 % \endinput
869 % End of file 'nddiss2e.cls'.
```

Change History

v0.98	addition of support for parts	
General: Initial beta version 1	MP	1
v1.0	$v3.2013\beta$	
Release: First release	Release: Initial release of updates in order to comply with the Graduate School's current formatting regulations and to take advantage of some LaTeX package updates. Should be functional, and has been approved by the Dissertation/Thesis editors, but has not undergone	
Release: Major revamp and clean-up of the code, added	wide-scale testing Megan Patnott	1
numrefs and textrefs to allow different kinds of citation styles, added some more macros and modified others,	Release: Fix natbib/showkeys ordering bug v3.2017.1	1
changed the titlepage a bit, completed source documentation	Release: Display (CONTINUED) on multipage long table captions	1
Release: Some bug fixes, minor	Release: Add LuaLaTeX support.	
changes in documentation, and	Allow non-capitalized titles	1