

DISSERTATION TITLE

Name

Submitted to the faculty of the University Graduate School

in partial fulfillment of the requirements

for the degree

Doctor of Philosophy

in the Department of Mathematics,

Indiana University

Month Year

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the
requirements for the degree of Doctor of Philosophy.

Doctoral Committee

Committee Chairperson, PhD

Committee Person 2, PhD

Committee Person 3, PhD

Committee Person 4, PhD

Month Day, Year

Acknowledgments

This is the (optional) acknowledgments page, which is designed to recognize people or agencies to whom you feel grateful for any academic, technical, financial, or personal aid in the preparation of your thesis. As a matter of courtesy, you should ordinarily mention the members of your committee here, as well as institutions that provided funding.

This is the (optional) dedication page. Per Graduate School standards, this page should appear with no title and should be centered horizontally and vertically.

Preface

This is the (optional) preface page which can be used if you wish. This page should appear after the dedication (or acknowledgements page if there is no dedication page) and before the abstract page.

Name
DISSERTATION TITLE

This abstract page is required. Make sure to adhere to the word count and other limits set by ProQuest. It should appear in your dissertation that is submitted to the Graduate School *without* signatures.

Committee Chairperson, PhD

Committee Person 2, PhD

Committee Person 3, PhD

Committee Person 4, PhD

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Chapter 1

Documentation

This document doubles as documentation for the `iuphd.cls` and as a sample for the output.

The `iuphd` class is based on the standard L^AT_EX report class, and as such you may assume that it follows the default formatting of the report class unless otherwise specified below.

The changes to the report class include the following:

- changes to the default settings for margins, font size (11pt), spacing (double), and pagination,
- the quote, quotation, and verse environments have been changed to switch temporarily to single spacing, and remove the extra space at the top and bottom,
- the enumerate and itemize environments have been changed to remove extra space between the items and at the top and bottom,
- a line has been added to prevent the double spacing from affecting arrays,
- both numbered and unnumbered chapter headings are now centered by default,
- changes to the definitions of `\maketitle` and the ‘abstract’ environment,
- the addition of commands for creating the acceptance page and copyright page,
- the addition of the ‘acknowledgments’, ‘preface’, and ‘dedication’ environments,
- the addition of macros for specifying the department or school name, the names of the committee members, the defense date, and the copyright year,
- document class options for changing “Department” to “School” on the title page, and for showing the abstract, preface, acknowledgments, or dedication in the table of contents.

The latest update (Summer 2018) makes the following changes from the last update (Fall 2013):

- Makes the left and right margins a uniform width of 1" on all pages.
- Headings have been changed so that they are no longer forced to be uppercase and so that they match the font size requirements of the Graduate School.
- Spacing of chapter headings has been changed so that the chapter headings appear at the top of the page.
- Lines have been added for the signatures on the Acceptance and Abstract pages.
- The Dedication page has been changed to remove the title and to center the text both horizontally and vertically.

The appropriate commands for each section are detailed in the section that follows. You can comment out any section you do not want by using a %.

1.1 Current Section Standards

The following document *should* adhere to the current standards of the Graduate School (last updated in Summer 2018). The current order of the sections must be

- Title Page
- Acknowledgements (optional)
- Dedication (optional)
- Preface (optional)
- Abstract
- Dissertation Body
- Bibliography
- Appendices, Indexes, List of Figures/Tables (optional)
- CV

Note: Some styles guides prefer appendices to come before the bibliography. Check your field's standards on this.

1.1.1 Table of Contents

Sections coming before the dissertation body appear in the table of contents without a chapter number and are numbered with Roman numerals. There does not seem to be a standard about whether the abstract, preface, acknowledgments, and dedication are listed in the table of contents (TOC) or not. As such, an option has been provided for including or excluding each one individually. The syntax for these options follows the pattern ‘showX’ if X is to be listed in the TOC, and ‘hideX’ if X is to be omitted from the TOC, where X can be any of the four items listed above. In all cases, the default is for these *not* to have entries in the table of contents. So for example, to include both the abstract and the preface in the table of contents, but not the dedication or acknowledgments, you would use the code:

```
\documentclass[showabstract,showpreface]{iuphd}
```

These commands are in use for this document but can be changed as necessary. Depending on how you include the sections that come before the dissertation body, you might have a numbering issue. This can be remedied by adding the line `\setcounter{page}0` immediately before the start of the first chapter of the dissertation body.

Including Sections in Bibliography

To include a line for the bibliography in the table of contents, the command

```
\addcontentsline{toc}{chapter}{Bibliography}
```

should be placed directly above the `\bibliography` and `\bibliographystyle` commands. It may be necessary to use `\clearpage` above this command to get the page number displayed in the contents to be correct. However, if you are using `\include` for each chapter, then `\clearpage` has technically already been used in this case, and so it is not necessary to use

it again. Similar commands will work for including any unnumbered heading in the table of contents, with careful attention to the effects of `\clearpage`.

1.1.2 CV

A CV is also required following the bibliography, however, to maintain maximum flexibility no special tools have been provided for formatting a CV. Various packages are available that do this, although custom formatting is best. As such, only a line for including the CV after the bibliography is included. Please note that the Graduate School currently requires the CV to have the same font as the rest of the dissertation.

1.2 Commands

Various commands have been defined for the data that will show up on the title page, acceptance page, and copyright page. These include:

- `\title` - for the title of the dissertation
- `\author` - for the name of the author of the dissertation
- `\date` - for the *completion date* of the dissertation
- `\department` - this is optional. The default value is “Mathematics,” but if you are in a different department, this command can be used to change its value to the name of whatever department (or school) you are in.
- `\committeechair`, `\readertwo`, `\readerthree`, `\readerfour` - for the names of the dissertation committee members.
- `\defensedate` - for the *defense date* of the dissertation (which may not match the completion date).
- `\cryear` - for the copyright year.

Additionally the commands `\acceptancepage` and `\copyrightpage` have been defined to generate the acceptance page and copyright page, respectively. The copyright page is not

required, and is commented out in this sample document. Two document class options have been provided for switching the text on the title page between “Department” and “School.” These options are given the obvious names ‘department’ and ‘school’. The default option is ‘department’, so it only needs to be changed if you are in a school rather than a department.

Chapter 2

Suggestions for additional formatting

2.1 The `\include` feature

For longer documents, it is often easier to manage if it is broken into multiple files. This can be done by using the `\include{filename}` or `\input{filename}` commands. You can think of `\input{filename}` as an alias for all of the text contained in `filename.tex`: the text contained in that file, simply gets inserted at the exact spot where the command `\input` is used. This means that `filename.tex` should not have `\begin{document}`, `\end{document}`, or a preamble. On the other hand, `\include{filename}` has the additional feature of adding `\clearpage` both before and after the text being inserted. As an example

```
\chapter{Introduction}
```

```
\include{chap1}
```

gives the title of chapter 1 as Introduction and the body of the chapter is in the file `chap1.tex`.

2.2 Useful Packages

Many \LaTeX packages are already available for additional customization of the formatting which is otherwise built in. Some of these are listed below. To use them, simply declare them with `\usepackage` in the preamble and refer to the documentation files for them, which are easily available online.

- `titlesec` - for custom formatting of part, chapter, and section headings.
- `nomencl` - for lists of notation (a tweak of `makeindex`).
- `prettyref` - for custom formatting of references (e.g. referencing equations as (1), (2),

etc., instead of the default 1, 2, etc.). The `ams` packages also have a similar feature but it is much more limited.

- `natbib`, `custom-bib`, or `biblatex` - offer additional flexibility for bibliography formatting beyond the standard used by the mathematics community.
- `setspace` - contains features for resetting the global line spacing, as well as environments that can be used to change spacing locally, which are compatible with the `quote`, `quotation`, and `verse` environments.
- `quoting` - provides a more flexible quotation environment, with options for adjusting the margins manually. This package should be used with `setspace`, to ensure single spacing of the quotations.
- `enumitem` or `paralist` - provide several more flexible list environments.
- `titling` - for custom changes to `maketitle`.
- `geometry` - for customizing the page layout.

The last two should not be necessary unless the standards at IU change. However, if that happens, it would really be better to rewrite the `iuphd` document class.

2.3 Quote samples

The `quote` environment:

“God does not play dice with the universe.” - Albert Einstein

The `quotation` environment:

“A GREAT discovery solves a great problem, but there is a grain of discovery in the solution of any problem. Your problem may be modest, but if it challenges your curiosity and brings into play your inventive faculties, and if you solve it by your own means, you may experience the tension and enjoy the triumph of discovery.”

- George Pólya

The `verse` environment:

Im September ist alles aus Gold:
die Sonne, die durch das Blau hinrollt,
das Stoppelfeld,
die Sonnenblume, schläfrig am Zaun,
das Kreuz auf der Kirche,
der Apfel im Baum.
Ob er hält,
ob er fällt?
Da wirft ihn geschwind
der Wind
in die goldene Welt.
- Georg Britting

Appendix A

Troubleshooting

If you are getting an error with the TOC, you might have compiled a previous *.toc file with a different latex class (e.g. the amsbook class). To remedy this, delete the current *.toc file and recompile.

Did you remember to use `\addcontentsline` and or `\clearpage` commands where necessary?