The ubthesis class*

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1 Introduction

This class provides a default format as well as formatting macros for easing the production of a thesis according to the UB guidelines for electronic theses and dissertations (http://www.grad.buffalo.edu/etd/etdguide.pdf).

2 Usage

To use this class, it must be loaded. This is done by declaring it as the class of the document.

```
\documentclass{ubthesis}
```

This class is based on the standard book class, so it can accept all the options associated with the book class. After specifying `ubthesis` as the document class, it will set the following things:

- the margins will be set to the correct spacing
- the headers and footers will be set so that the title of the current chapter/section will be placed in the upper right, the name of the author will be placed in the lower left, and the page number will appear in the lower center, with horizontal rules separating the header from the main content (this applies to the main chapters) - this can be redefined by setting the fancyhdr settings appropriately
- the headers and footers for the frontmatter content will be set so that there are no headers and the only thing in the footer is the page number, at bottom center - this can be redefined by changing fancyhdr settings
- `\cleardoublepage` will be redefined so that empty pages will really appear as empty, instead of outputting headers and footers when there is no content

*This document corresponds to ubthesis ?, dated ?.

- `\listoffigures` and `\listoftables` will be redefined so that they output information to the table of contents
- the `titlepage` environment will be redefined so that it clears only one page, allowing the copyright page to appear on the reverse side
- `\maketitle` will be redefined to correctly output and format the content of the titlepage
- various macros and environments will be defined for use in the thesis, the descriptions of which are provided in the following subsections.

2.1 Macro descriptions

`\conferral` The `\conferral{`⟨*date*⟩`}` macro has one required argument ⟨*date*⟩. It is used by `\maketitle` to print the conferral or defense date in the correct position on the Title page.

`\dept` The `\dept{`⟨*department*⟩`}` macro has one required argument ⟨*department*⟩. It is used by `\maketitle` to print "Department of *department*" in the correct position on the Title page. The value of ⟨*department*⟩ should be capitalized (the first letter should be uppercase).

`\degree` The `\degree{`⟨*degree*⟩`}` macro takes one required argument ⟨*degree*⟩. It is used by `\maketitle` to print the name of the degree in the correct position on the Title page. The value of ⟨*degree*⟩ can be one of the following:

ma Master of Arts

ms Master of Science

me Master of Engineering

mfa Master of Fine Arts

mmus Master of Music

murbp Master of Urban Planning

march Master of Architecture

phd Doctor of Philosophy

ed Doctor of Education

nsd Doctor of Nursing Science

`\makecopyright` The `\makecopyright` macro takes no arguments, and produces the copyright page. It typesets the copyright information at the bottom of the page, using the author name from `\author{`⟨*name*⟩`}` and the current year.

`\references` The `\references{`⟨*title*⟩`}{`⟨*reffile*⟩`}` macro requires the argument ⟨*reffile*⟩ which is the name of the .bib file you want to use for references. The filename given

in ⟨*reffile*⟩ should not include the trailing .bib. The argument ⟨*title*⟩ is used to specify the title of the reference section. The macro calls `\bibliography{reffile}` to produce the actual bibliographic output. If the BibTeX package you are using makes use of a different command to input .bib files, you can work around this by including the following definition in the preamble of your document.

```
\def\bibliography{\YOUR_BIB_COMMAND}
```

You only need to replace `YOUR_BIB_COMMAND` with the name of the command your BibTeX package uses to input .bib files.

`\author` The `\author{`⟨*name*⟩`}` macro sets the author name for the document, using ⟨*name*⟩. This is used both for the Title page as well as the Copyright page (if present).

`\title` The `\title{`⟨*title*⟩`}` macro sets the title for the document, using ⟨*title*⟩, which appears on the Title page.

`\maketitle` The `\maketitle` macro is a redefinition of the standard `\maketitle`. It will output the document title, author's name, dept., and intended degree in the correct positions on the titlepage, in addition to the required static text (such as the "...in partial fulfillment of..." text).

2.2 Environment descriptions

`ubfrontmatter` The `ubfrontmatter` environment sets the formatting for the frontmatter pages. This includes ensuring that the page numbering will be correct — i.e. that the Copyright page (if present) begins with page number ii, that Acknowledgements begins with iii, etc. Note that you still have to include the different items in the correct order. If you include the Copyright page after the Acknowledgements page, things will not appear correct.

`ubbackmatter` The `ubbackmatter` environment sets the formatting for the backmatter pages. This mainly just means that it will start a new full page after the main matter has finished, because the formatting for the main matter should be the same, but this environment will ensure the formatting for the backmatter even if the formatting for the main matter changes (which should never happen).

`acknowledgements` The `acknowledgements` environment will produce a title for the Acknowledgements page which will appear the same as the titles for the table of contents, list of figures, etc. It will also provide a link to the table of contents, so that your Acknowledgements will be included in the listing of contents.

`abstract` The `abstract` environment will produce a title for the Abstract page which will appear the same as the titles for the table of contents, list of figures, etc. It will also provide a link to the table of contents, so that your Abstract will be included in the listing of contents.

3 Implementation

This section describes the actual implementation of the UB Thesis class itself. If you are not interested in hacking the ubthesis.cls file, you should skip this section.

3.1 Preamble

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesClass{ubthesis}[2007/04/27 v1.0 UB Thesis Class]

\ProcessOptions
```

The standard book class is used as a default for deriving the bulk of the formatting definitions for the UB Thesis class.

```
\LoadClassWithOptions{book}

```

The geometry package is required for setting the margin spacings of the document as conformant to the specifications of the university.

```
\RequirePackage[letterpaper,margin=1.25in]{geometry}
```

The setspace package is required for setting double line spacing of the document as conformant to the specifications of the university.

```
\RequirePackage[letterpaper,margin=1.25in]{geometry}
```

The fancyhdr package is used to define the headers and footers that appear on pages other than the titlepage and opening pages of chapters (which have no headers or footers).

```
\RequirePackage{fancyhdr}

```

This is the actual definition of the headers and footers. The commands `\sectionmark` and `\chaptermark` are redifined to ensure that the title of the current chapter or section will appear in the header. The command `\rhead` uses these titles to print the current section/chapter title in the righthand side of the header. `\lfoot` uses an internal variable (`\UBT@author`) to print the name of the document author in the lefthand side of the footer. `\rfoot` defines the righthand side of the footer to print the page number of the current page. Finally, `\cfoot` places a rule at the bottom of the page to separate the page content from the page footer (the header automatically includes a rule, so it is not necessary to specify one).

```

\addtolength{\headheight}{\baselineskip}
\pagestyle{fancy}
\renewcommand{\sectionmark}[1]{\markright{#1}}
\renewcommand{\chaptermark}[1]{\markright{#1}}
\fancyhf{}

\lhead{\large\emph{\UBT@author}}
\chead{}
\rhead{\large\rightmark}
```

```
\lfoot{}
\cfoot{\thepage}
\rfoot{}

```

`\pagestyle{fancy}` sets the document to use the header and footer definitions we gave to the fancyhdr package.

```

\pagestyle{fancy}

```

3.2 Prototype definitions

The following is a block of command prototypes. This simply reserves the names for the commands that will be defined later in the class file using `\renewcommand`. Any command beginning with `UBT@` is an internal command, not meant to be seen by end-users, nor manipulated directly. The internal commands should either be constants, or defined via external commands.

```

\newcommand*{\UBT@author}{}
\newcommand*{\UBT@title}{}
\newcommand*{\UBT@conferral}{}
\newcommand*{\UBT@degree}{}
\newcommand*{\UBT@degreetitle}{}
\newcommand*{\UBT@degrees}{}
\newcommand*{\UBT@dept}{}
\newcommand*{\UBT@cdp}{}
\newcommand*{\UBT@lot}{}
\newcommand*{\UBT@lof}{}
\newcommand*{\UBT@ma}{}
\newcommand*{\UBT@ms}{}
\newcommand*{\UBT@mse}{}
\newcommand*{\UBT@mfa}{}
\newcommand*{\UBT@mmus}{}
\newcommand*{\UBT@murbp}{}
\newcommand*{\UBT@march}{}
\newcommand*{\UBT@phd}{}
\newcommand*{\UBT@ed}{}
\newcommand*{\UBT@nsd}{}
\newcommand*{\UBT@thesis}{}
\newcommand*{\UBT@bibname}{}

\newcommand*{\conferral}{}
\newcommand*{\dept}{}
\newcommand*{\degree}{}
\newcommand*{\makecopyright}{}
\newcommand*{\references}{}

```

Likewise, these are environment prototypes, to be given definitions later via `\renewenvironment`.

```
\newenvironment{ubfrontmatter}{}{}
\newenvironment{acknowledgements}{}{}
\newenvironment{abstract}{}{}
\newenvironment{ubbackmatter}{}{}
```

3.3 Saving preset commands

This is some trickery to save the preset values/defintions of the `\cleardoublepage`, `\listoftables`, and `\listoffigures` commands to internal variables. The usefulness of this trickery will become evident later, when the redefinitions of the preset commands is are discussed.

```
\let\UBT@cdp\cleardoublepage
\let\UBT@lot\listoftables
\let\UBT@lof\listoffigures
```

3.4 Constant variable definitions

This block defines a series of constant variables. This acts like an `enum` in C or C++, assigning an `int` to each name. These names correspond to the possible choices for the type of degree the thesis is being written for. These are all internal variables and are not meant to be visible to or directly manipulated by the end-user.

```
\renewcommand{\UBT@ma}{1}
\renewcommand{\UBT@ms}{2}
\renewcommand{\UBT@mse}{3}
\renewcommand{\UBT@mfa}{4}
\renewcommand{\UBT@mmus}{5}
\renewcommand{\UBT@murbp}{6}
\renewcommand{\UBT@march}{7}
\renewcommand{\UBT@phd}{8}
\renewcommand{\UBT@ed}{9}
\renewcommand{\UBT@nsd}{10}
```

3.5 Macro definitions

`\author` Not unlike the standard `\author` command, this is used to hold the name of the document author. The value is stored in the internal variable `\UBT@author`.

```
```

```
\renewcommand{\author}[1]{\renewcommand{\UBT@author}{#1}}
```

`\title` Similar to the use of `\author`, this defines the title of the document, and the value is held in the internal variable `\UBT@title`.

```
\renewcommand{\title}[1]{\renewcommand{\UBT@title}{#1}}
```

`\conferral` This macro is used to define the date of the conferral of the degree or defense of the thesis, and the value is held in the internal variable `\UBT@conferral`.

```
\renewcommand{\conferral}[1]{\renewcommand{\UBT@conferral}{#1}}
```

`\dept` This macro is used to define the department for which the thesis is being written. The value is stored in the internal variable `\UBT@dept`.

```
\renewcommand{\dept}[1]
{
\renewcommand{\UBT@dept}{Department of \MakeUppercase#1}
}
```

`\degree` This macro takes a nice and short acronym for a degree name, and replaces it with the full, proper name for the degree, storing the result in the internal variable `\UBT@degree`. This gets used in the titlepage to print the degree which the thesis partially satisfies.

```
\renewcommand{\degree}[1]{
\renewcommand{\UBT@degree}{
\ifcase\csname UBT@#1\endcsname\or
Master of Arts\or
Master of Science\or
Master of Engineering\or
Master of Fine Arts\or
Master of Music\or
Master of Urban Planning\or
Master of Architecture\or
Doctor of Philosophy\or
Doctor of Education\or
Doctor of Nursing Science
\fi
}
\renewcommand{\UBT@thesis}{%
\ifcase\csname UBT@#1\endcsname\or
thesis\or
thesis\or
```

```
thesis\or
thesis\or
thesis\or
thesis\or
thesis\or
dissertation\or
dissertation\or
dissertation
\fi
}
}

```

`\maketitle` This macro pulls in a lot of other macros and formats their contents to produce the titlepage. The title is set at the top of the page via `\UBT@title`, the author is set in the middle of the page via `\UBT@author`, and the "...in partial fulfillment of..." text is set at the bottom via the `\UBT@degree` and `\UBT@dept` commands.

```

\renewcommand{\maketitle}
{
\begin{center}
\par \LARGE \UBT@title
\end{center}

\vspace{\stretch{1}}

\begin{center}
\par by
\bigskip
\par \Large \UBT@author
\smallskip
\par \large \UBT@conferral
\end{center}

\vspace{\stretch{1}}

\begin{center}
\par A~\UBT@thesis{} submitted to the
\par Faculty of the Graduate School of the
\par State University of New York at Buffalo
\par in partial fulfillment of the requirements for the degree of
\bigskip
\par \UBT@degree
\bigskip
\par \UBT@dept
\end{center}
\thispagestyle{empty}
}

```

\makecopyright The \makecopyright macro automatically produces the copyright page. It uses the internal variable \UBT@author to print the author name, and the numerical value of the \year command to determine the current year. All of the output text is placed at the bottom of the page via the \vspace*{\fill} command. Note that the * is necessary, as it is the first thing that appears on the page, and LaTeX by default will cancel the added space because it would normally be deemed unnecessary. The * forces LaTeX to insert the vertical space.

```
\renewcommand{\makecopyright}{
%\clearpage
\vspace*{\fill}
\begin{center}
\par Copyright by
\par \UBT@author
\par \number\year
\end{center}
%\clearpage
\cleardoublepage
}
```

This redefines the traditional \cleardoublepage so that truly empty pages (for example those appearing between chapters) do not receive any output at all. This is accomplished by first clearing a single page and setting that page's pagestyle to empty, so that it has neither a header nor a footer. It then does the original \cleardoublepage, which was stored in \UBT@cdp earlier, to make sure that the following output appears on the right page (right-hand page for a new chapter for example). This will not clear more pages than necessary though, so it is safe to use anywhere it might be needed (i.e. if already on a lefthand page, calling this macro will simply move to the righthand page and do nothing else).

```
\renewcommand{\cleardoublepage}{
\clearpage
\thispagestyle{empty}
\UBT@cdp
}
```

This redefines the standard \listoftables to additionally link to the table of contents.

```
\renewcommand{\listoftables}{
\UBT@lot
\addcontentsline{toc}{chapter}{List of Tables}
}
```

This redefines the standard \listoffigures to additionally link to the table of contents

```
187
188 \renewcommand{\listoffigures}{
189 \UBT@lof
190 \addcontentsline{toc}{chapter}{List of Figures}
191 }
192
```

\references The \references macro sets up the references/bibliography page. This is intended to be used with BibTeX, and the end-user should include some package for handling the bibliography style (e.g. natbib, lsalike, etc.). It takes an optional argument for the title of the references page, which defaults to References. The second argument, which is mandatory, is the name of the bib file. This macro also adds the contents of its title to the table of contents (along with the page on which it occurs).

```
193
194 \renewcommand{\references}[2][References]
195 {
196 \renewcommand{\UBT@bibname}{#1}
197 \addcontentsline{toc}{chapter}{\UBT@bibname}
198 \bibliography{#2}
199 \renewcommand{\bibname}{\UBT@bibname}
200 %\cleardoublepage
201 }
202
```

This redefines the thebibliography environment so that it uses our internal UBT@bibname variable as defined via the user's call to \references and sets up a chapter to contain the references, as well as the actual bibliography listing environment.

```
203
204 \renewenvironment{thebibliography}[1]
205 {
206 \chapter*{\UBT@bibname}%
207 %\@mkboth{\MakeUppercase\UBT@bibname}{\MakeUppercase\UBT@bibname}%
208 \list{\@biblabel{\@arabic\c@enumiv}}%
209 {
210 \settowidth\labelwidth{\@biblabel{#1}}%
211 \leftmargin\labelwidth
212 \advance\leftmargin\labelsep
213 \@openbib@code
214 \usecounter{enumiv}%
215 \let\p@enumiv\@empty
216 \renewcommand\theenumiv{\@arabic\c@enumiv}}%
217 \sloppy
218 \clubpenalty4000
219 \@clubpenalty \clubpenalty
220 \widowpenalty4000%
221 \sfcode`\.\@m
```

```
}
{
\def\@noitemerr{\@latex@warning{Empty `thebibliography' environment}}%
\endlist
}

```

3.6 Environment definitions

`titlepage` This redefines the `\titlepage` macro to ensure that it will only clear one page, so that (if it is used) the `\makecopyright` will output the copyright material to the real second page, which should be a lefthand page.

```

\renewenvironment{titlepage}
{
}
{
\thispagestyle{empty}
\clearpage
}

```

`ubfrontmatter` The `ubfrontmatter` environment sets the page numbering and style for all the material which is to appear as frontmatter. This includes the copyright, acknowledgements, table of contents, list of figures, list of tables, abstract, and any other pages that might be included before the beginning of the main matter (i.e. before the first chapter, which is typically the introduction).

```

\renewenvironment{ubfrontmatter}
{
\pagenumbering{roman}
\pagestyle{plain}
\setcounter{page}{2}
}
{
\pagestyle{fancy}
\cleardoublepage
\pagenumbering{arabic}
}

```

`ubbackmatter` The `ubbackmatter` environment sets up the backmatter pages. This includes the references/bibliography, appendix, glossary, index, and any other pages that might appear after the main matter has finished. This doesn't really do much, as the backmatter pages essentially have the same format as the mainmatter pages, with the major difference being in the numbering schemes of the chapters themselves (for the appendices and etc.).

```
250
251 \renewenvironment{ubbackmatter}
252 {
253 %\clearpage
254 \cleardoublepage
255 \thispagestyle{plain}
256 \pagestyle{plain}
257 %\pagenumbering{arabic}
258 }
259 {
260 %\cleardoublepage
261 \thispagestyle{plain}
262 \pagestyle{plain}
263 }
264
```

`acknowledgements` The `acknowledgements` environment sets the formatting for the environment page. This involves setting a chapter title of `Acknowledgements` and outputting this title and the page number to the table of contents (as well as making sure the title information is included in the header information for the acknowledgement pages).

```
265
266 \renewenvironment{acknowledgements}
267 {
268 \chapter*{Acknowledgements}
269 \markboth
270 {\MakeUppercase{Acknowledgements}}
271 {\MakeUppercase{Acknowledgements}}
272 \addcontentsline{toc}{chapter}{Acknowledgements}
273 }
274 {
275 \cleardoublepage
276 }
277
```

`abstract` The `abstract` environment sets the formatting for the environment page. This involves setting a chapter title of. This involves setting a chapter title of `abstract` and outputting this title and the page number to the table of contents (as well as making sure the title information is included in the header information for the acknowledgement pages).

```
278
279 \renewenvironment{abstract}
280 {
281 \chapter*{Abstract}
282 \markboth
283 {\MakeUppercase{Abstract}}
284 {\MakeUppercase{Abstract}}
285 \addcontentsline{toc}{chapter}{Abstract}
286 }
```

```
{
\cleardoublepage
}
```

Change History

v1.0

General: Initial version 1

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