Abstract

mugsthesis is a document class to be used for typesetting Marquette University Graduate School (MUGS) theses and dissertations. It is based on the memoir class, and meets the basic requirements contained in the MUGS Thesis/Dissertation Directives. The class provides a minimal set of changes to the memoir class to meet the university’s specifications. As such, it should be compatible with any other packages that are compatible with the widely used memoir class.

1 Introduction

The mugsthesis document class is designed to allow straightforward preparation of MUGS theses and dissertations using the \LaTeX{} document preparation system. It complies with the MUGS Thesis/Dissertation Directives while maintaining compatibility with other packages used to extend the functionality of \LaTeX{}.

Development of the document class is currently hosted on sourcehut\footnote{https://sr.ht/~pdgessler/mugsthesis/}. You are welcome to follow development, submit any issues you discover, or suggest improvements/enhancements using the web interface or mailing list there.

The easiest way to start using the mugsthesis document class is to take a look at the sample document provided, mugsthesis_sample.tex, along with its associated included files. You can take this as the basis for your own thesis or dissertation.

2 Package Options

The class supports several options for configuring the appearance of the thesis or dissertation. Apart from the options below, memoir is loaded with options letterpaper and oneside as specified in the Thesis/Dissertation Directives.

3 Document Type

The type of document, either a thesis or a dissertation, is adjusted through the use of the options thesis (default) and dissertation. thesis produces a thesis
and dissertation produces a dissertation. Currently, the only difference is in the text on the title page. The document type options are mutually exclusive.

### 3.1 Font Size

The base font size of the document is adjusted through use of the options 10pt, 11pt, and 12pt (default). The font size options are mutually exclusive; if more than one is specified, the default will be used.

### 3.2 Other Options

The options final (default) and draft configure the output document: final produces a camera-ready copy of the thesis, while draft marks overfull lines with black rules in the margins, and may have interaction with other packages. The most common interaction is that graphicx will place empty boxes instead of the actual graphics when the draft option is set. These options are mutually exclusive.

The options indentfirsttrue (default) and indentfirstfalse configure the indentation of the first paragraph following a heading. The Thesis Directives show indentation of the initial paragraphs and specify that “new paragraphs should be indented 0.5 in”. Centuries of typographers contend that the purpose of indentation is to mark the beginning of a new paragraph, and the heading itself serves that purpose for the first paragraph under a heading. So the indentfirstfalse option is provided if you agree with this contention. These options are mutually exclusive.

### 3.3 Unsupported memoir Options

The memoir class has many other options. Traditionally, an author can specify a base class option and the derived class will pass that option to the base class. However, many of these options would cause non-compliance with the MUGS Thesis Directives. For this reason, all unsupported options are reported to the log file and otherwise ignored.

### 4 Usage

A number of commands (macros) and environments are defined by mugsthesis for use in the preparation of theses. In-context examples of their use may be found in mugsthesis_sample.tex.

```latex
\title{⟨title⟩}
```

The \title{⟨title⟩} macro takes a single mandatory argument, which is the title of the thesis. Ensure that it is less than 120 characters long, and that it is entered with line breaks chosen to produce the requested inverted pyramid format. An example from the Thesis Directives:

```latex
\title{
A STUDY OF THE SOCIOLOGICAL IMPACT OF THE
1984 OLYMPICS ON THE POVERTY
LEVEL OF CITIZENS OF
LOS ANGELES
}
```

The capitalization here is not strictly necessary; all letters are converted to upper case internally.
The macro \author{⟨author⟩} accepts a single mandatory argument, which should contain the author’s name and credentials. Using the Thesis Directives example once again:

\author{John J. Smith, B.A.}

The \degree{⟨degree⟩} macro takes a single mandatory argument, the degree pursued by the author. An example from the directives, as ever:

\degree{Master of Science}

The macros \degreemo{⟨month⟩} and \degreeyr{⟨year⟩} each accept a single argument, which is the month and year, respectively, during which the degree is to be conferred. The value of ⟨month⟩ must be one of May, August, or December:

\degreemo{December}
\degreeyr{2013}

The \maketitle command typesets the title page with all the previously-declared metadata, and should be used immediately at the beginning of the \document environment.

\tableofcontents
\listoftables
\listoffigures

Additionally, lists of tables and lists of figures may be used. The commands \tableofcontents, \listoftables, and \listoffigures should be used to generate these lists with the appropriate formatting. \tableofcontents should follow the abstract and any optional environments used in the front matter. \listoftables or \listoffigures should be used after \tableofcontents. If both are used, \listoftables should precede \listoffigures.

The Graduate School requires a table of contents to appear in every thesis.

The switch commands \frontmatter, \mainmatter, and \appendix set the page and chapter numbering styles for the appropriate parts of the thesis. They should immediately precede the abstract, first main body chapter, and first appendix (if any), respectively.

The \bibname command contains the name text for the bibliography (default: BIBLIOGRAPHY). If the chosen citation/reference style specifies a different name (for example: REFERENCES), it can be changed with:

\renewcommand{\bibname}{REFERENCES}

Many other commands and environments are defined by the memoir class for document elements including (sub)figures, (sub)tables, associated captions, quotations, and more. Consult the memoir documentation\footnote{http://texdoc.net/pkg/memoir} for complete details. If these or customizations from other packages are used, it is ultimately the author’s responsibility to verify that compliance with the Thesis Directives is maintained.

5 Implementation

First, load etoolbox for patching existing commands.

\RequirePackage{etoolbox}

Many other commands and environments are defined by the memoir class for document elements including (sub)figures, (sub)tables, associated captions, quotations, and more. Consult the memoir documentation\footnote{http://texdoc.net/pkg/memoir} for complete details. If these or customizations from other packages are used, it is ultimately the author’s responsibility to verify that compliance with the Thesis Directives is maintained.
Declare a new boolean to control indentation of initial paragraphs.

```latex
\newbool{indentfirst}
```

Declare class options, pass them to the base class if applicable, and discard any unsupported options, warning the user they have been ignored.

```latex
\DeclareOption{thesis}{\def\@mugsdoctype{Thesis}}
\DeclareOption{dissertation}{\def\@mugsdoctype{Dissertation}}
\DeclareOption{10pt}{\PassOptionsToClass{10pt}{memoir}}
\DeclareOption{11pt}{\PassOptionsToClass{11pt}{memoir}}
\DeclareOption{12pt}{\PassOptionsToClass{12pt}{memoir}}
\DeclareOption{final}{\PassOptionsToClass{final}{memoir}}
\DeclareOption{draft}{\PassOptionsToClass{draft}{memoir}}
\DeclareOption{indentfirsttrue}{\booltrue{indentfirst}}
\DeclareOption{indentfirstfalse}{\boolfalse{indentfirst}}
\DeclareOption*{\ClassWarning{mugsthesis}{Unknown option '{\CurrentOption}' ignored}}
```

Execute default options `thesis`, `12pt`, `final`, and `indentfirsttrue`, and process the author-specified options.

```latex
\ExecuteOptions{thesis,12pt,final,indentfirsttrue}
\ProcessOptions\relax
```

Use the `indentfirst` package if `indentfirsttrue` is set.

```latex
\ifbool{indentfirst}{\RequirePackage{indentfirst}}{}
```

Load the base `memoir` class with options `letterpaper` and `oneside`.

```latex
\LoadClass[letterpaper,oneside]{memoir}
```

Set the line spacing and justification according to the MUGS Thesis Directives. Additionally set `\raggedbottom` to avoid underfull `\hbox`es with rigid skip lengths.

```latex
\DoubleSpacing
\raggedright
\raggedbottom
```

Set the page layout.

```latex
\setlrmarginsandblock{1.5in}{1.0in}{*} % left and right margins
\setulmarginsandblock{1.0in}{1.0in}{*} % top and bottom margins
\setheaderspaces{0.5in}{*}{*} % header 0.5in from edge
\marginparmargin{left} % use the wider (left) margin for notes
\setmarginsnotes{0.125in}{1.25in}{\baselineskip} % type area for notes
\checkandfixthelayout[lines] % check the layout; TODO check algorithm selection
```

Set the paragraph indentation.

```latex
\setlength\parindent{0.5in}
```

Define and use the `mugs` pagestyle for page numbering throughout the thesis.

```latex
\makepagestyle{mugs}
\makeevenhead{mugs}{}{}{\thepage}
\makeoddhead{mugs}{}{}{\thepage}
```

Alias the `chapter` pagestyle to `mugs` so the chapter opening pages have numbering identical to the rest of the pages, and set the page style for the document.

```latex
\aliaspagestyle{chapter}{mugs}
\pagestyle{mugs}
```

Define `\degree{\langle degree\rangle}` to set the degree name for the title page.

```latex
\degree\degree\text{mo}\degreeyr
```

Define `\newcommand{\degree}[1]{\def\mugsdegree{#1}}`
Similarly, define $\text{\textbackslash{degreemo}}\{\text{month}\}$ and $\text{\textbackslash{degeeeye}}\{\text{year}\}$ to set the date of conferral for the title and abstract pages.

\texttt{\newcommand{\textbackslash{degreemo}}[1]{\def\mugsdegreemo{#1}}}  
\texttt{\newcommand{\textbackslash{degeeeye}}[1]{\def\mugsdegreeyr{#1}}}

\texttt{\textbackslash{title}}  
Redefine $\textbackslash{title}$ to use full upper case.

\texttt{\renewcommand{\textbackslash{title}}[1]{\def\@title{\uppercase{#1}}}}

\texttt{\textbackslash{maketitle}}  
Redefine $\textbackslash{maketitle}$ to produce the appropriate title page, using all author metadata.

\texttt{\renewcommand{\textbackslash{maketitle}}{%}  
\cleardoublepage  
pagening{Alph}  
\SingleSpace  
\thispagestyle{empty}  
\centering  
\@title  
vfill  
by  
vskip \onelineskip  
@author  
vfill  
A \mugsdoctype submitted to the Faculty of the Graduate School, Marquette University, in Partial Fulfillment of the Requirements for the Degree of \mugsdegree{}  
vfill  
Milwaukee, Wisconsin  
vskip \onelineskip  
\mugsdegreemo~\mugsdegreeyr  
clearpage  
}}

\texttt{\textbackslash{abstract}} (env.)  
Redefine the $\textbackslash{abstract}$ environment for typesetting according to the directives.

\texttt{\renewenvironment{\textbackslash{abstract}}{%}  
\thispagestyle{empty}  
\begin{SingleSpace}  
\begin{center}  
ABSTRACT  
\@title  
vskip 2\onelineskip  
@author  
vskip \onelineskip  
Marquette University, \mugsdegreeyr  
vskip 2\baselineskip  
\end{center}  
\@afterindentfalse\@afterheading \% makes indentfirst work with custom envs  
\end{SingleSpace}\setcounter{page}{0}  
}}

\texttt{\textbackslash{acknowledgments}} (env.)  
Define the optional $\textbackslash{acknowledgments}$ environment.

\texttt{\newenvironment{\textbackslash{acknowledgments}}{%}  
}}

5
\addcontentsline{toc}{chapter}{ACKNOWLEDGMENTS}
\chapter*{Acknowledgments}
\begin{SingleSpace}
\begin{center}
\unskip
\@author
\vskip 2\onelineskip
\end{center}
\@afterindentfalse\@afterheading
\end{SingleSpace}

\newenvironment{dedication}{% 
\addcontentsline{toc}{chapter}{DEDICATION}
\chapter*{Dedication}
\begin{SingleSpace}\vskip\onelineskip
\@afterindentfalse\@afterheading
}{\end{SingleSpace}}{\end{SingleSpace}}

\setcounter{lofdepth}{2}
\setcounter{lotdepth}{2}

\makechapterstyle{mugs}{% 
\setlength{\midchapskip}{0pt}
\setlength{\afterchapskip}{0pt}
\renewcommand*{\chapterheadstart}{}
\renewcommand*{\chaptitlefont}{\bfseries}
\renewcommand*{\printchaptername}{\centering \MakeTextUppercase{\@chapapp}}
\renewcommand*{\printchapternum}{\thechapter}
\renewcommand*{\printchaptertitle}[1]{% 
\SingleSpacing \protect\parbox{\textwidth}{% 
\centering \chaptitlefont \MakeTextUppercase{##1}
}}% end{mugs}
\chapterstyle{mugs}

\pretocmd{\listoffigures}{\clearforchapter}{}{\ClassWarning{mugsthesis}{Patching \noexpand\listoffigures failed}}
\pretocmd{\listoftables}{\clearforchapter}{}{\ClassWarning{mugsthesis}{Patching \noexpand\listoftables failed}}

Style the ToC, LoT, LoF, and Bibliography headings.
\renewcommand*{\contentsname}{TABLE OF CONTENTS}
\renewcommand*{\listtablename}{LIST OF TABLES}
\renewcommand*{\listfigurename}{LIST OF FIGURES}
\renewcommand*{\bibname}{BIBLIOGRAPHY}

\texttt{dedication (env.)} Define the optional dedication environment.
\newenvironment{dedication}{% 
\addcontentsline{toc}{chapter}{DEDICATION}
\chapter*{Dedication}
\begin{SingleSpace}\vskip\onelineskip
\@afterindentfalse\@afterheading
}{\end{SingleSpace}}{\end{SingleSpace}}

Declare subfloats using memoir facilities.\footnote{These are not needed by all users; consider an option to enable? Maximum depth required?}
\newsubfloat{figure}
\newsubfloat{table}

Define and use the MUGS chapter style throughout the thesis.
\makechapterstyle{mugs}{% 
\setlength{\midchapskip}{0pt}
\setlength{\afterchapskip}{0pt}
\renewcommand*{\chapterheadstart}{}
\renewcommand*{\chaptitlefont}{\bfseries}
\renewcommand*{\printchaptername}{\centering \MakeTextUppercase{\@chapapp}}
\renewcommand*{\printchapternum}{\thechapter}
\renewcommand*{\printchaptertitle}[1]{% 
\SingleSpacing \protect\parbox{\textwidth}{% 
\centering \chaptitlefont \MakeTextUppercase{##1}
}}% end{mugs}
\chapterstyle{mugs}

Put the LoT and LoF on their own pages by patching their definitions.
\pretocmd{\listoffigures}{\clearforchapter}{}{\ClassWarning{mugsthesis}{Patching \noexpand\listoffigures failed}}
\pretocmd{\listoftables}{\clearforchapter}{}{\ClassWarning{mugsthesis}{Patching \noexpand\listoftables failed}}
\renewcommand*{\listtablename}{LIST OF TABLES}
\renewcommand*{\listfigurename}{LIST OF FIGURES}
\renewcommand*{\bibname}{BIBLIOGRAPHY}

Specify one line skip between bibliography entries.
\setlength{\bibitemsep}{\onelineskip}
\prebibhook
Redefine \prebibhook to set single spacing in the bibliography and proper spacing after the heading.
\renewcommand*{\prebibhook}{\SingleSpacing\vskip\onelineskip}
\biblistextra
Redefine \biblistextra to set item separation and indentation.
\renewcommand*{\biblistextra}{%
\setlength{\itemsep}{\bibitemsep}
\setlength{\leftmargin}{0.375in}% hanging indent
\setlength{\itemindent}{\labelwidth}%
\addtolength{\itemindent}{\labelsep}
\addtolength{\itemindent}{-\leftmargin}
}
\tableofcontents
Do not place an entry for the ToC within the ToC itself.
\renewcommand{\tableofcontents}{%}
\@ifstar{\mem@tableofcontents{01}}{\mem@tableofcontents{01}}%
\}

Set the indentation for the ToC, LoT, and LoF (0.5 in additional per level).
\setlength{\cftchapterindent}{0.0in}
\setlength{\cftsectionindent}{0.5in}
\setlength{\cftsubsectionindent}{1.0in}
\setlength{\cftparagraphindent}{2.0in}
\setlength{\cftsubparagraphindent}{2.5in}
\setlength{\cfttableindent}{0.0in}
\setlength{\cftsubtableindent}{0.5in}
\setlength{\cftfigureindent}{0.0in}
\setlength{\cftsubfigureindent}{0.5in}
Ragged right within and one line skip between ToC, LoT, and LoF entries.
\setmarg{3.55em plus 1fil}
\setlength{\cftbeforechapterskip}{\onelineskip}
\setlength{\cftbeforesectionsstop}{\onelineskip}
\setlength{\cftbeforesubsectionsstop}{\onelineskip}
\setlength{\cftbeforeparagraphskip}{\onelineskip}
\setlength{\cftbeforesubparagraphskip}{\onelineskip}
\setlength{\cftbeforetablesstop}{\onelineskip}
\setlength{\cftbeforesubtablesstop}{\onelineskip}
\setlength{\cftbeforefigureskip}{\onelineskip}
\setlength{\cftbeforesubfigureskip}{\onelineskip}
\insertchapterspace
No extra space between chapters.
\renewcommand{\insertchapterspace}{\}}
Switch to single spacing in the ToC, LoT, and LoF.
\renewcommand{\aftertoctitle}{\vspace{-\onelineskip}\aftergroup\SingleSpacing}
\renewcommand{\afterlottitle}{\vspace{-\onelineskip}\aftergroup\SingleSpacing}
\renewcommand{\afterloftitle}{\vspace{-\onelineskip}\aftergroup\SingleSpacing}

\cftchapterfont
\cftchapterleader
\cftchapterpagefont
Style the ToC chapter headings.
\renewcommand{\cftchapterfont}{\normalfont}
\renewcommand{\cftchapterleader}{\cftsectionleader}
\renewcommand{\cftchapterpagefont}{\normalfont}

\f@rtoc
For hyperref bookmarks functionality (if present).
\AtEndPreamble{\providecommand{\texorpdfstring}{[2]{#1}}}
\settocpreprocessor{chapter}{\let\tempf@rtoc\f@rtoc\def\f@rtoc{%}
\texorpdfstring{\MakeTextUppercase{\tempf@rtoc}}{\tempf@rtoc}}{}

Set spacing in quote and quotation environments.
\AtBeginEnvironment{quote}{\par\SingleSpacing}
\AtBeginEnvironment{quotation}{\par\SingleSpacing}

Set sectional unit numbering levels and ToC depth.
\maxsecnumdepth{subsection}
\settocdepth{subsection}

Style the lower-level headings.
\newlength{\preheadskip}\setlength{\preheadskip}{1sp plus 1sp minus 1sp}
\newlength{\postheadskip}\setlength{\postheadskip}{\onelineskip}
\setsecheadstyle{\bfseries\SingleSpacing}
\setbeforesecskip{\preheadskip}
\setaftersecskip{\postheadskip}
\setsubsecheadstyle{\bfseries\SingleSpacing}
\setbeforesubsecskip{\preheadskip}
\setaftersubsecskip{\postheadskip}
\setsubsubsecheadstyle{\bfseries\SingleSpacing}
\setbeforesubsubsecskip{\preheadskip}
\setaftersubsubsecskip{\postheadskip}

Set the list and table spacings.
\tightlists
\AtBeginEnvironment{tabular}{\SingleSpacing}

Set the caption styles and spacing.
\captionstyle[\centering]{\raggedright}
\subcaptionsize{\small}
\setlength{\abovecakeption}{\parsep}
\setlength{\belowcakeption}{-\parsep}

Avoid orphans, widows, and other detritus.
\clubpenalty=10000
\widowpenalty=9996
\brokenpenalty=4991
\predisplaypenalty=10000
\postdisplaypenalty=1549
\displaywidowpenalty=1602
Set the spacing between floats and surrounding elements.

\setlength{\floatsep}{3\onelineskip}
\setlength{\intextsep}{2\onelineskip}
\setlength{\textfloatsep}{2\onelineskip}
\setlength{\dblfloatsep}{2\onelineskip}
\setlength{\dbltextfloatsep}{2\onelineskip}

Change History

v1.0
  General: Initial public release .......... 1
dissertations .............................. 1

v1.1
  General: Added document type

Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

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