The MUthesis Document Class*

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Abstract

A document class, MUthesis, is defined that implements the formatting requirements for theses and dissertations at the University of Missouri, also referred to as the University of Missouri-Columbia by some. The class is based on report, but is conscious of two-sided documents as well.

1 Introduction

The MUthesis document class is intended to match—with minimal user effort—the formatting requirements for theses and dissertations at the University of Missouri.

Note that the graduate school is notoriously nonchalant about enforcing any formatting requirements, and many theses and dissertations have been turned in that show inconsistent formatting from frontmatter chapters compared to the main document. It should come as a surprise to no one who is familiar with \TeX and its design principles that this class strives for such consistency throughout the document.

Documents should be written as though using the report class, with the exception of the front matter (material prior to Chapter 1). In fact, it is possible to use this document class without any of the front matter, assuming one avoids the \maketitle command as well as other commands defined in Section 2 specific to the thesis/dissertation format.

2 Using This Class

The first line of your file should be

\documentclass{MUthesis}

for dissertations,

\documentclass[thesis]{MUthesis}

for theses, or

\documentclass[comprehensive]{MUthesis}

*This document corresponds to MUthesis v1.8, dated 2020/03/25.
for comprehensive examinations (dissertation proposals). Note that a dissertation is written for a doctorate and a thesis for a Master’s degree. You can also specify the dissertation option explicitly if you wish.

Loading the document class will automatically set the paper size, line spacing, and text size; changes in typeface, inclusion of images, and other aspects are changed in the usual way through compatible packages.

2.1 Class Options

The class defines the following options:

**10pt,11pt,12pt** Default: 12pt. Sets the text size to the given size. These are passed directly to the \texttt{report} class.

**dissertation** (default) Sets options for doctoral dissertations and sets the default degree to “Doctor of Philosophy” (Ph.D.)

**thesis** Sets options for Master’s theses and sets the default degree to “Master of Science” (M.S.)

**comprehensive** Sets options for comprehensive examinations. Default degree is still “Doctor of Philosophy” (Ph.D.)

**doublespace** (default) Sets format to double-spacing. Required for final submissions.

**singlespace** Sets format to single-spacing. Intended for preliminary drafts or testing purposes; unacceptable for final submissions.

**nolisthyphen** Turn off hyphenation in the Table of Contents, List of Figures, etc. Only use this if something looks wrong with the hyphenation that cannot be solved other ways or if someone complains.

**nohyphen** Turn off hyphenation throughout the entire document. Only use this if someone actively complains about your document’s hyphenation and other fixes (e.g., \texttt{\hyphenation}) do not work.

**hyperpages** (default) Load the \texttt{hyperref} package with options that disable hyperlinks but still link PDF page numbers to the document’s page numbers.

**hyper** Load the \texttt{hyperref} package with hidden links and PDF pages that are linked to the real page numbers.

**nohyper** Disable loading of \texttt{hyperref} package. Use this option if you experience problems with \texttt{hyperref} or if you plan to include color hyperlinks or other \texttt{hyperref} features. If you do plan to use other \texttt{hyperref} features, you should include the \texttt{pdfpages} option when loading the package.

All other options to this class are passed as-is to the \texttt{report} class.
2.2 Entering Document Data

Document data, such as committee members and chairs, are entered through commands. These commands may be used either in the preamble or in the document itself, provided they come before \maketitle.

\title The thesis/dissertation title.
\author Your full name, as it appears in your official University records. If your name here does not match that in the University's records, you need to change your official name with the University administration.
\date The date (month and year) your degree will be issued. This is not the date of your defense. It can only be May, July, or December and the year.
\copyrightyear The year of copyright, if you are printing a copyright page. Should be the same year as your graduation year, unless publication is withheld for some reason. The copyright page is optional.
\degree If your degree is something other than the default, you can change it with the \degree command. For example, a Master of Music might use \degree{Master of Music}{M.M.} and a Doctor of Education might be \degree{Doctor of Education}{Ed.D.}. The default is \degree{Doctor of Philosophy}{Ph.D.} for a dissertation or comprehensive (dissertation proposal) and \degree{Master of Science}{M.S.} for a thesis.
\chair The chair of your committee, as the name will appear on both the Title and Approval pages. If you are co-advised, see the \cochairs command.
\cochairs Takes two arguments: the first and second co-chairs of your committee, as their names will appear on the Title and Approval pages. If you only have one advisor, or you have two advisors but the Graduate School is only aware of one of them (i.e., it's not "official"), then you should use the \chair command.
\firstreader Your first committee member who is not an advisor. Note that the Graduate School makes no distinctions between inside and outside members in the thesis/dissertation itself, so all we need here is a name.
\secondreader Your second committee member. This is optional for co-advised theses.
\thirdreader Your third committee member. This is optional for theses and co-advised dissertations.
\fourthreader Your fourth committee member (optional). Additional committee members can be added with \fifthreader and \sixthreader.

2.3 Front Matter

\frontmatter The first command after \begin{document} should be \frontmatter; in fact, this is implicit, so this line is optional.
\maketitle The command \maketitle should appear right after \frontmatter (or directly after \begin{document}). This makes the title page. An error will result if you issue this command without issuing \title, \author, and \chair (or \cochairs).
\copyrightpage The \copyrightpage is optional. If it appears, then it should be directly after \maketitle. If no \author or \copyrightyear have appeared, an error will result. This command does nothing with the comprehensive option in place.
\approvalpage The \approvalpage should immediately follow the \copyrightpage (if present) or \maketitle (if there is no copyright page). All committee mem-
bers must have already been defined, as well as the title, author, and chair(s).
This command does nothing with the comprehensive option in place.

The spacing between names on the approval page can be adjusted by adjusting
the length \nameskip using something like \setlength or \addtolength.

dedication

The dedication environment is optional. It is similar to the dedication page
of a book, and formatted similarly. Example:
\begin{dedication}
To my mother.
\end{dedication}

epigraph

The epigraph environment is optional. It takes one non-optional argument,
which is the source of the quote. Example:
\begin{epigraph}{Anonymous}
"Hyperbole is the best thing ever."
\end{epigraph}

acknowledgments

Acknowledgments are required for all dissertations and theses. They can
(and should) be omitted in comprehensive exams. This page is where you would
acknowledge all those who helped you with your academic research. This is not
necessarily where you would recognize loved ones who supported you during
your studies. That would be more appropriately done in an optional Dedication
page. It is always page ii, regardless of the number of (unnumbered) pages before
it. Omitting this environment will result in a warning for theses and dissertations.

\tableofcontents \listofillustrations \listoftables \listoffigures \listofschemes \listofsymbols

The Table of Contents is mandatory. The lists of Illustrations, Tables, Figures,
and Schemes are mandatory if you have any Illustrations, Tables, etc. Most doc-
uments will only have Tables and Figures; Schemes are common in chemistry
and chemical engineering, and some disciplines differentiate between Illustra-
tions and Figures (or prefer one term over the other). If the lists appear, they
should appear in the order listed here. The \listofsymbols macro (identical to
\printnomenclature) is defined only if the nomencl package has been loaded.
You are encouraged to use the following packages to generate these: tikz for
illustrations; array, tabularx, and booktabs for tables; graphicx for figures;
chemfig for schemes; and nomencl for symbols.

\listof Note that the \listof macro from the float package is compatible with this
package, so additional floats can be defined using that mechanism.

abstract

The abstract environment is optional (yeah, right). The Abstract should be
one paragraph, and generally should not exceed one page in length. Note that
the abstract that appears here can technically be different than the one submitted
as a separate file, but that is generally not advisable.

\mainmatter

The first command of the main text must be \mainmatter. This command does
things like reset page counters, change page numbering, and other important
formatting. An effort is made to issue a warning if this command is absent.

\chapter

Chapters are described in the usual way, with the \chapter command. This
command is "smart" enough to know whether it is used in \frontmatter,
\mainmatter, and \backmatter, as well as whether it is in the main text or in
the appendix.

\appendix

The \appendix command is used the same way as in report.
2.5 Back Matter

\backmatter

The main text, including appendices, if present, ends with the \backmatter command. This command is automatically issued in the bibliography in documents that do not use chapterbib, but it is advisable to issue it prior to that.

\bibliography

The bibliography can be entered in the standard ways: manually, using the thebibliography environment, or automatically, with \BibTeX and an appropriate bibliography style.

Note that there is a difference between a references section and a bibliography. The former is a list of documents cited in the text; the latter is a list of all references consulted during the making of the document, regardless of whether they are cited in the text. Theses and dissertations have bibliographies, so it is recommended that you issue \nocite{*} right before \bibliography to make sure your entire \BibTeX database gets added to the bibliography.

The style of the bibliography is entirely up to you and your advisor. In the absence of a strong preference, it is recommended that you follow the citation style of a major journal or book publisher in your field. References can be numeric or author–year style; packages such as cite and natbib will help facilitate this.

This class has not been tested with \BibTeX; it is unknown whether there are any compatibility issues, though it is worth noting that at the time of writing, Biber (\BibTeX’s back-end) is incapable of handling author lists longer than a few authors long, and therefore (in the author’s opinion) that package has a long way to go before it is accepted in the mainstream.

This class is compatible with the chapterbib package, which allows for reference lists at the end of each chapter and a comprehensive bibliography at the end of the document. Reference lists at the end of the document are not numbered if chapterbib is included.

glossary

Glossaries are optional (and in fact relatively rare in theses and dissertations). They can be included by including the glossaries package. The \MUthesis class is aware of this package and redefines the environment to be compatible. See the documentation for the glossaries package.

Note that if you want a list of symbols (nomenclature), try the nomencl package and the \listofsymbols (or \printnomenclature) command.

index

An index is rare in a thesis/dissertation, but one can be included by the makeidx package and associated commands. See the documentation for that package.

vita

A Vita is required for dissertations, but not for theses. This is included via the vita environment. There are no restrictions on the length. This is not intended to be a curriculum vitae; instead, think of a brief biography of the author, such as would appear at the end of a book.

2.6 Compatibility with Standard Packages

The \MUthesis document class is specifically aware of the features of the following packages and redefines some of their internals for consistency in formatting:

chapterbib This class has only been tested with numeric citation styles. As currently implemented, in-chapter reference lists have the header References, while the comprehensive bibliography at the end is unnumbered and has the heading Bibliography. You can change these defaults by redefining \refname and \bibname.
This class overrides some of natbib’s settings, particularly with respect to how numbers are formatted. If you want to change something and it does not seem to be working, try redefining it after \begin{document}, as the class may be undoing your redefinitions.

The nomencl package automatically has the heading “List of Symbols,” though this can be restored or changed by redefining \nomname, as usual.

Slight tweaks are made to format the glossary and list of acronym headers.

Indices are compatible with this class.

This class takes care of defining new floats with this package, to the point that no additional work should be required by the user.

This class is compatible with hyperref. The hyperref package is loaded by default, though the default options are stripped down so as to fix the numbering of pages in the PDF but not actually create hyperlinks. Using hyperref with full links is supported in this version as well. See the documentation for the hyper, hyperpages, and nohyper class options.

This class is compatible with subcaption, though its use is strongly discouraged: subcaptions look tacky. If you insist on using them, know that the [hyper] option will create spurious entries in the list of figures. This is solved by including the hyperref package explicitly, e.g., \usepackage[pdfpagelabels,hidelinks]{hyperref}.

There are no known compatibility problems with other packages, but any that occur will be mentioned. However, users are strongly advised to avoid the following packages, as they will subvert formatting done by the class:

Do not mess with the titles or sections this way

It is unknown what will happen if you use this on top of the tweaks to the Table of Contents and List of [objects] that have already been implemented

It is not advisable to redefine margins or page geometry

Users should feel free to use the caption package to tweak the look of their captions, though it is already loaded and used by this class—instead of using the optional arguments, use caption’s \captionsetup command.

2.7 Known Issues

The chapter headings, title, and (on the title page) author’s name are made uppercase to conform to the Graduate School’s templates via \LaTeX’s \MakeUppercase macro, which has the side effect that things like names or chemical symbols will also be made uppercase, even in cases in which you might not want that to happen. For example, an author named McDonald might want his/her last name to be written MCDONALD on the title page, but it would instead be rendered MCDONALD.
To fix this, use David Carlisle’s textcase package with the overload option, then use \NoCaseChange on the letter(s) in question. You will likely have to use \protect to prevent macro expansion until the appropriate location. For example,

\author{James M\protect\NoCaseChange{c}Loughlin}\title{The Effects of Dichromates $(\protect\NoCaseChange{\text{Cr}^{6+}})$ in Aquifers}

after including the textcase and mhchem packages would render the appropriate case in both instances.

3 Example Dissertation

The following will more or less reproduce the front matter and back matter in the example files the graduate school produces.

\documentclass{MUthesis}
% options:
% doublespace  -- the default, indicates double spacing as per MU requirements; use for all final copies
% singlespace  -- for early work; not acceptable for final draft
% dissertation  -- default; indicates this is a dissertation
% thesis  -- indicates this is a Master's thesis; changes the default for \degree{} to Master of Science / M.S.
% comprehensive  -- indicates this is a comprehensive exam; disables \copyrightpage and \signaturepage
% nolisthyphen  -- disallows hyphenation in the Table of Contents and the list of figures/tables; only use if the graduate school or your committee complain
% nohyphen  -- disallows hyphenation /everywhere/; don't use unless someone complains (and even then, fight back!)
% hyperpages  -- default: loads hyperref with stripped down options
% hyper  -- loads hyperref with page labels and invisible links
% nohyper  -- turns off loading of hyperref completely; usually the hyperpages option, which uses hyperref only to fix page labels (so that i is called i, not 1, in the PDF), is a better choice. Use this if you want to load hyperref with other options than either "hyper" or "hyperpages"
% All other options are passed as-is to the "report" class; the default size is 12pt, but you can specify 10 or 11 pt (or any other size supported by "report")

\usepackage{txfonts}
\usepackage{graphicx}
\DeclareGraphicsExtensions{.pdf,.png,.jpg,.mps}
\title{Family Type and Incidence of Childhood Depression}
\author{Jeffery Lehmkuhl}
\date{May 2001} % The date you'll actually graduate -- must be

7
% December, May, or July
\copyrightyear{2001} % year of graduation / publication
%\cochairs{}{} % multiple chairs
\chair{Thomas Sink} % a single chair
\firstreader{Vijay Kumar}
\secondreader{Gary Cortez}
\thirdreader{John Smith}
\fourthreader{Gail Newman}

% Your degree's name;
\degree{Doctor of Philosophy}{Ph.D.}
% defaults to {Doctor of Philosophy}{Ph.D.} (option "dissertation"; default)
% defaults to {Master of Science}{M.S.} for theses (option "thesis")

\begin{document}
\frontmatter % optional (automatically set at \begin{document})
\maketitle % mandatory
\copyrightpage % optional
\approvalpage % mandatory

% optional
\begin{dedication}
To my sister
\end{dedication}

% optional / usually absent
\begin{epigraph}{Anonymous}
"Hyperbole is the best thing ever."
\end{epigraph}

% Acknowledgments are required for all dissertations and theses
\begin{acknowledgments}
This page is where you would acknowledge all those who helped you with your academic research. This is not necessarily where you would recognize loved ones who supported you during your studies. That would be more appropriately done in an optional Dedication page. Think more, "I thank Professor Smith \dots"


Sed eu sem et lorem blandit volutpat. Duis pulvinar, arcu quis suscipit convallis, ante elit auctor dui, in fermentum diam velit a mauris. In risus odio, consectetuer quis, ullamcorper in, rutrum ut, metus.

\end{acknowledgments}

% Table of Contents is mandatory; lists are mandatory if you have any of them;
% they must be in this order

8
\begin{abstract}
The Short Academic Abstract is not to exceed one page in length. The Abstract should be double-spaced. This should be a separate file on your CD saved as ‘short.pdf.’

If you want to use the same Abstract (or a longer version) in the thesis or dissertation, that is permissible.


\end{abstract}

\chapter{The Efficiency of Everything}
Blah blah blah.
Blah blah blah.
Blah blah blah.
Blah blah blah.
Blah blah blah.
Blah blah blah.
Blah blah blah.
Blah blah blah.

\include{chapter2}

% end of body

\appendix

\chapter{Data That Need Showing}
The body of the text begins here. This should be indented and double-spaced. There are no restrictions on the length. This is not intended to be a curriculum vitae. Jeffrey Smith was born Ut tellus augue, aliquet ut, tincidunt non, congue ac, justo. In tempus, mauris sit amet tincidunt dapibus, nulla nunc dignissim nulla, nec auctor tortor velit non felis. Mauris lacus massa, scelerisque id, tincidunt quis, rutrum id, est.


\end{vita}

\end{document}

4 Implementation

4.1 Default settings

\univ@name The name of the University; its value, which you should never have to change, is “University of Missouri”; the University’s thesis/dissertation guidelines say “University of Missouri-Columbia,” but this is several years out of date. The Graduate School may eventually update it, but until then, I made the executive decision to follow the University’s name/brand guidelines and leave it this way.

\newcommand*{\univ@name}{University of Missouri}

There are several other internal commands used to define the degree name, its abbreviation, the type of document, and various other things that are controlled by class options.
Special commands are defined for degrees (e.g., °C yields °C) and the "micro" symbol (e.g., 5.6 µm yields 5.6 µm); these features use the textcomp package. **Important:** you cannot use \degree for this purpose, as that macro is used to define the name of your degree (e.g., Doctor of Philosophy)!

4.2 Class Options

The text size is defined here so we can pass it along to report without problems.

The comprehensive option is for dissertation proposals (comprehensive exams), which do not have a copyright page, approval page, or acknowledgments.
4.3 Process document class options

Spacing (single vs. double); this is handled by the \texttt{setspace} package for double spacing. Since the default is single-spacing, I just defined those macros and environments to do nothing when single spacing is in effect.

4.4 Margins

These macros define the correct margins to satisfy the graduate school if letter sized paper (the default) is used. If you use something other than letter sized paper, you are on your own.
Widow/orphan control; anything less than 10000 allows these to happen, which is strictly forbidden by most style sheets.

80 \widowpenalty=10000
81 \clubpenalty=10000

Text/float fraction tweaks; we allow slightly more of the page to be filled than the default, which is 0.5. The default \topfraction can also be tweaked (default: 0.7), as can \textfraction (default: 0.2).
82 \renewcommand*{\floatpagefraction}{0.6}

4.5 Chapter and section commands

\toc@label
Instead of redefining \chapter after we encounter \appendix, I redefine this command and leave \chapter alone.
83 \newcommand*{\toc@label}{frontmatter}

\if@first@in@section
This one was defined to make the word Chapter (or Appendix) appear in the table of contents.
84 \newif\if@first@in@section
85 \@first@in@sectionfalse

\chapter
The only change here from report is that we indent the text right after the heading.
86 \renewcommand\chapter{%
87 \if@openright\cleardoublepage\else\clearpage\fi
88 \thispagestyle{plain}%
89 \@afterindenttrue
90 \global\@topnum\z@
91 \secdef\@chapter@schapter
92 }

These two \providecommand lines define commands that are overridden if/when hyperref gets loaded. They essentially do nothing if it is not loaded.
93 \providecommand*{\texorpdfstring}{[2]{\expandafter #1}}
94 \providecommand*{\phantomsection}{}

\@chapter
The only difference in \@chapter from report.cls is the part about contents lines.
95 \def\@chapter[#1]#2{\ifnum \c@secnumdepth >\m@ne
96 \refstepcounter{chapter}%
97 \typeout{\@chapapp\space\thechapter.}%
98 \addcontentsline{toc}{chapter}%
99 {\protect\numberline{\thechapter.}}%
100 \texorpdfstring{\MakeUppercase{#1}}%
101 {\thechapter. #1}%
102 }
103 \else
104 \addcontentsline{toc}{chapter}%
105 {\texorpdfstring{\MakeUppercase{#1}}{#1}[]}
106 \fi
107 \chaptermark{#1}%
\@makechapterhead Heading for the chapter command; all caps, bold, but otherwise ordinary text. Less space than in standard reports.
\renewcommand{\@makechapterhead}[1]{% % Heading for \chapter command
  \vspace*{30\p@} % Space at top of text page.
  \begin{center}\large\bfseries
  \ifnum \c@secnumdepth >\m@ne
    \MakeUppercase{\chapapp} \thechapter % 'CHAPTER' and number.
  \fi
  \addvspace{\topskip}
  \MakeUppercase{#1}
  \par\nobreak % TeX penalty to prevent page break.
  \vskip 24\p@ % Space between title and text.
%}

\@makeschapterhead Exactly the same as \@makechapterhead except without the Table of Contents entry.
\renewcommand{\@makeschapterhead}[1]{% % Heading for \chapter* command
  \vspace*{30\p@} % Space at top of page.
  \begin{center}
    \large\bfseries % Title.
    \MakeUppercase{#1}\par
  \end{center}
  \nobreak % TeX penalty to prevent page break.
  \vskip 24\p@ % Space between title and text.
%}

\@dotsep Default separation between dots in the table of contents is 4.5; we reduce it here so it looks a bit more aesthetically pleasing. Units are “math units” (mu), where 18 mu = 1 em.
\renewcommand*{\@dotsep}{2}

\l@chapter This macro creates chapter headings in the Table of Contents. If this is the first chapter after \mainmatter or \appendix, it adds the word Chapter or Appendix to the Table of Contents as well.
\renewcommand{\l@chapter}[2]{% % Heading for \chapter* command
  \addpenalty{-\@highpenalty} %
  \addvspace{\baselineskip} %
  \if@first@in@section
    \addvspace{2\baselineskip} %
  \parindent\z@ \par
  \addvspace{\baselineskip} %
  \parindent\z@ \par
  \addvspace{\baselineskip} %
  \if@first@in@sectionfalse
%}
We use slightly different spacings around section headings than in the report class. Note that \z@ means "0 pt."

\renewcommand{\section}{% 
\@startsection{section}{1}{\z@} \{4.5ex \@plus 2ex \@minus .2ex} \{0.001ex \@plus .2ex} 
{\normalfont\bfseries}} \renewcommand{\subsection}{% 
\@startsection{subsection}{2}{\z@} \{3.25ex \@plus 1ex \@minus .2ex} \{0.001ex \@plus .2ex} \{\normalfont\bfseries}} \renewcommand{\subsubsection}{% 
\@startsection{subsubsection}{3}{\z@} \{3.25ex \@plus 1ex \@minus .2ex} \{0.001ex \@plus .2ex} \{\normalfont\bfseries}} \renewcommand{\paragraph}{% 
\@startsection{paragraph}{4}{\z@} \{2.5ex \@pluslex \@minus.2ex} \{-1em} \{\normalfont\normalsize\bfseries}} \renewcommand{\subparagraph}{% 
\@startsection{subparagraph}{5}{\z@} \{0.0ex \@plus lex \@minus.2ex} \{-1em} \{\normalfont\small\bfseries}}

\contentsname Default ToC name in report is “Contents”; we change it to be consistent with the Graduate School’s requirements.
\renewcommand*{\contentsname}{Table of Contents}

\tableofcontents Tweaks to the Table of Contents.
\renewcommand{\tableofcontents}{% 
\if@openright\cleardoublepage\else\clearpage\fi 
\renewcommand*{\thepage}{\roman{page}}% 
\pagestyle{plain}% 
\if@twocolumn 
\@restonecoltrue\onecolumn 
\else 
\@restonecolfalse 
\fi 
\chapter*{%\contentsname 
\chaptername*{%\contentsname 
\MakeUppercase\contentsname}{\MakeUppercase\contentsname}}% 
\pdfbookmark{\contentsname}{\contentsname}% 
\% Next line is the other change from report.cls 
\{\hyphenpenalty=\list@hyphen@penalty\@starttoc{toc}}% 
\if@restonecol\twocolumn\fi 
\chapter*{%
% If you are using double columns, you will need to add the following lines: 
% \pagebreak[3] 
% \vspace{0pt}% 
% \cleardoublepage
\@dottedtocline
\the tocindent

The following code keeps page numbers from protruding into the margin when \TeX{} can't figure out how to make the line shorter; copied from umthesis.cls (UMass Amherst / John Ridgway)

\def\the tocindent{-1}
\newlength{\MUthesis@contentshangindent}
\setlength{\MUthesis@contentshangindent}{1.55em}
\renewcommand{\@dottedtocline}[5]{% 
  \ifnum #1>\c@tocdepth \else \ifnum \the tocindent = #1 \else \def\the tocindent{#1} \fi \fi \vskip \z@ \@plus.2\p@ \leftskip #2 \relax \rightskip \@tocrmarg \parfillskip -\rightskip \advance \rightskip by 0pt plus 1fil \relax % ragged-right contents...
\parindent #2 \relax \@afterindenttrue \leavevmode \@tempdima #3 \relax \advance \leftskip \@tempdima \null \nobreak \hskip -\leftskip \hangindent \MUthesis@contentshangindent {#4} \nobreak \leaders \hbox{$\m@th \mkern \@dotsep \mu \hbox{.}\mkern \@dotsep \mu$} \hskip 3em plus 1fill \relax \normalfont \normalcolor #5 \par} %
\fi

4.6 Lists of Figures and Tables

\tablenumberwidth

The width of numbers in the table of contents is hard-coded into report.cls; this makes it mutable
\newlength{\tablenumberwidth}
\setlength{\tablenumberwidth}{2.3em}

\listoffigures
\listoftables

We use \chapter here, rather than \chapter*, so it appears in the Table of Contents. Since we are in \frontmatter, no number is generated.

\renewcommand{\listoffigures}{%
  \if\twocolumn  \restonecoltrue\onecolumn \else \restonecolfalse \fi
  \chapter{\listfigurename} %
  \@mkboth{\MakeUppercase{\listfigurename}}{\MakeUppercase{\listfigurename}}
  \normalsize\textbf{\figurename\hfill Page}\par
  \hyphenpenalty=\listhyphenpenalty\@starttoc{lof}\fi
}
\renewcommand{\listoftables}{%
  \if\twocolumn  \restonecoltrue\onecolumn \else \restonecolfalse \fi
  \chapter{\listtablename}\par
  \@mkboth{\MakeUppercase{\listtablename}}{\MakeUppercase{\listtablename}}
  \normalsize\textbf{\tablenumberwidth}\par
  \hyphenpenalty=\listhyphenpenalty\@starttoc{lto}\fi
}
Dotted line in List of Figures; we reuse this for tables and other floats as well.

Caption tweaks. We use the caption package for this.

We had 75% more space between floats and the text

Appendix also has to produce the word “Appendix” in the Table of Contents

Write Appendix just above the first appendix in the Table of Contents. We also exclude sections, subsections, etc. from the ToC.

4.7 Special commands

These are used to change page numbering, set chapter numbering, etc.; the \frontmatter command is issued automatically at the beginning of the document.
No chapter or section numbers in the front matter.

\setcounter{secnumdepth}{-1} %
\global\@mainmatterfalse
\global\@backmatterfalse
\global\@firstininsectionfalse
\pagenumbering{roman} %
\pagestyle{empty} %
\mainmatter

\newcommand{\mainmatter}{% 
\if@openright\cleardoublepage\else\clearpage\fi 
\restorepagemargins % Section numbering by default goes all the way down, but only out to % subsections in the Table of Contents 
\setcounter{secnumdepth}{7} %
\setcounter{tocdepth}{3} %
\global\@mainmattertrue 
\global\@backmatterfalse 
Put "Chapter" in the Table of Contents. 
\immediate\write\@auxout{\renewcommand*{\toc@label}{\chaptername} %
\@firstininsectiontrue} %
\pagestyle{plain} %
\doublespacing %
\pagenumbering{arabic} %
\setcounter{chapter}{0} %
}

\backmatter

This turns chapter numbers off again (bibliography, etc.).

\newcommand{\backmatter}{% 
\if@mainmatter\else %
\ClassWarning{MUthesis}{Encountered 'backmatter' with no 'mainmatter'} %
\AtEndDocument{%
\ClassWarningNoLine{MUthesis}{Encountered 'backmatter' with no 'mainmatter'}% %
\fi %
\setcounter{secnumdepth}{-1} %
\addtocounter{toc}{-1} %
\addtocontents{toc}{\protect\setcounter{tocdepth}{3}} %
\global\@backmattertrue 
\global\@mainmatterfalse %
}
We should have encountered \texttt{mainmatter} (and probably \texttt{backmatter}) at some point.

\AtEndDocument{

\if@mainmatter
\ClassWarningNoLine{MUthesis}{No 'backmatter' encountered (no bibliography?)%}
\else
\if@backmatter\relax\else
\ClassWarningNoLine{MUthesis}{No 'mainmatter' or 'backmatter' encountered}%
\fi
\fi
}

4.8 Front matter

\copyrightpage Copyright page is optional.
\newcounter{real@page}
\newcommand{\copyrightpage}{%
\clearpage
This makes the page number "c" in the PDF (no number is printed), which avoids hyperref warnings about invalid/duplicate page numbers. We set the page number back to its original value (plus 1) to make sure subsequent pages’ right/left situations in the PDF are still correct.
\setcounter{real@page}{\value{page}}%
\renewcommand*{\thepage}{\alph{page}}%
\pdfbookmark{Copyright}{Copyright}%
\thispagestyle{empty}%
\null\vfill
\noindent\begin{minipage}{0.98\textwidth}
\centering\copyright\ Copyright by \@author\ \copyright@year\ \par
\doublespacing
All Rights Reserved
\end{minipage}
\vspace{1.25in}\null
\clearpage
}\pagenumbering{roman}%
\setcounter{page}{\value{real@page}}%
\stepcounter{page}
\let\copyrightpage\relax
}

\maketitle Make the title page. The \texttt{ifco@chairs} macro allows for co-chairs.
\renewcommand{\maketitle}{%
\begin{titlepage}
\pagestyle{empty}%
\thispagestyle{empty}%
The next three lines make the title page page i (required) and unnumbered (also required); it appears in the PDF’s outline, but not in the Table of Contents.
\pdfbookmark{Title Page}{Title Page}%
\setcounter{page}{1}%
A \documentname\par
presented to\par
the Faculty of the Graduate School\par
at the \univ@name \par
\rule{4in}{1pt}\par
of Partial Fulfillment\par
of the Requirements for the Degree\par
@degree\par
\rule{4in}{1pt}\par
by\par
\MakeUppercase{\protect@author}\par
\ifco@chairs
Dr.˜@firstchair\ and Dr.˜@secondchair, \thesis@type\ Supervisors
\else
Dr.˜@chair, \thesis@type\ Supervisor
\fi
\par
\MakeUppercase{@date}\par
\end{center}\par
\vfill
\null
\end{titlepage}\par
\clearpage
\renewcommand*{\thepage}{\alph{page}}\par
\let\thanks\relax
\let\maketitle\relax
\approvalpage
The approval page is required, but not numbered.
\newlength{\nameskip} \setlength{\nameskip}{0.5in}
\newlength{\rule@thickness} \setlength{\rule@thickness}{0.5pt}
\newcommand*{\rule@width}{0.55\textwidth}
\newcommand{\approvalpage}{\renewcommand*{\thepage}{\alph{page}}\par
\makeatletter
\@namedef{pdfbookmark}{\@textpdfbookmark{Approval Page}{Approval Page}}
\makeatother
\cleardoublepage
The following four lines put the Approval Page in the PDF outline and make the
PDF page number “a,” assuming hyperref is loaded. If it is not, they do nothing.
\providecommand*{\pdfbookmark}{\@make@pdfbookmark{Approval Page}{Approval Page}}
%\setcounter{page}{1}
The undersigned, appointed by the dean of the Graduate School, have examined
the \MakeLowercase{\thesis@type} entitled

\begin{center}
\vspace{1ex}
\begin{minipage}{\textwidth}
\noindent\centering
\MakeUppercase{\@title}
\vspace{1ex}
\end{minipage}
\end{center}
presented by \@author,\par
a candidate for the degree of {\@degree},\par
and hereby certify that, in their opinion, it is worthy of acceptance.\par

\vskip 1.25\nameskip
\begin{center}
\ifco@chairs
\rule{\rule@width}{\rule@thickness}\par
Professor \@firstchair, co-chair\par
\vskip\nameskip
\rule{\rule@width}{\rule@thickness}\par
Professor \@secondchair, co-chair\par
\vskip\nameskip
\else
\rule{\rule@width}{\rule@thickness}\par
Professor \@chair, chair\par
\vskip\nameskip
\fi
\rule{\rule@width}{\rule@thickness}\par
Readers (committee members); first reader is always there.
\rule{\rule@width}{\rule@thickness}\par
Professor \@firstreader, member\par
\vskip\nameskip
Second reader and further, if present
\ifsecond@reader
\rule{\rule@width}{\rule@thickness}\par
Professor \@secondreader, member\par
\vskip\nameskip
\fi
\ifthird@reader
\rule{\rule@width}{\rule@thickness}\par
Professor \@thirdreader, member\par
\vskip\nameskip
\fi
\iffourth@reader
\rule{\rule@width}{\rule@thickness}\par
Professor \@fourthreader, member\par
\vskip\nameskip
\fi
\ifthifth@reader
\rule{\rule@width}{\rule@thickness}\par
Professor \@fifthreader, member\par
\vskip\nameskip
\fi
Make certain there is nothing on the back of the approval page.

\cleardoublepage

\section*{Dedication}

The dedication environment is optional and not numbered.

\newcommand*{\dedicationname}{Dedication}
\newenvironment{dedication}{% 
\if@openright\cleardoublepage\else\clearpage\fi
\null\vfil
The next two lines change the page number in the PDF to “d” if hyperref has 
been loaded. They do nothing if it has not.
\renewcommand*{\thepage}{\alph{page}}% 
\thispagestyle{empty}%
\pdfbookmark{\dedicationname}{\dedicationname}%
\vfil
\begin{quotation}
\end{quotation}\vfil\vfil\null

\section*{Epigraph}

Epigraph is optional. The optional argument is the person to whom to attribute 
the quotation. The next two lines change the page number in the PDF to “e” if 
hyperref has been loaded. They do nothing if it has not.
\newcommand*{\epigraphname}{Epigraph}
\newenvironment{epigraph}{% 
\clearpage\null\vfil
\renewcommand*{\thepage}{\alph{page}}%
\gdef\epi@author{#1}%
\thispagestyle{empty}%
\pdfbookmark{\epigraphname}{\epigraphname}%
\vfil
\begin{quote}
\hspace{0.25\linewidth}---\epi@author\par
\vfil\vfil\null
\end{quote}
}{%\par\end{quote}\vfil\vfil\null

\section*{Acknowledgments}

Acknowledgments are required, and required to be numbered page ii; we use 
that fact to set the page counter. RANT: it’s super-duper annoying in two-sided 
documents that the acknowledgments (a “chapter”) starts on an even-numbered 
page! It requires me to do all kinds of creative things (such as redefining 
\cleardoublepage) and is generally unnecessary and stupid.\footnote{Pretty much every rule the administration makes at the University of Missouri is unnecessary and stupid.}
\newlength{\other@margin}
\newif\ifmargins@normal
\margins@normaltrue
\newcommand{\reversepagemargins}{%
  \if@twoside
    \ifmargins@normal
      \other@margin=\oddsidemargin\relax
      \global\oddsidemargin=\evensidemargin\relax
      \global\evensidemargin=\other@margin\relax
      \global\margins@normalfalse
    \fi
  \fi
}\fi
\restorepagemargins{%
  \if@twoside
    \ifmargins@normal
      \else
        \other@margin=\oddsidemargin\relax
        \global\oddsidemargin=\evensidemargin\relax
        \global\evensidemargin=\other@margin\relax
        \global\margins@normaltrue
      \fi
    \fi
  \fi
}\fi
\let\normal@cleardoublepage\cleardoublepage
\renewcommand*{\cleardoublepage}{%
  \ifmargins@normal
    \normal@cleardoublepage
  \else
    \clearpage
    \if@twocolumn\clearpage\fi
  \fi
}\fi
\ackname{Acknowledgments}
\newenvironment{acknowledgments}{%
  \chapter{\ackname}\
  \phantomsection\n  \pagenumbering{roman}\n  \setcounter{page}{2}% graduate school requirement that this is page ii....
  \reversepagemargins
  \pagestyle{plain}\n  \global\ack@foundtrue
  \begin{doublespace}

  \thispagestyle{plain}\n}{%
}\end{doublespace}
abstract  The abstract environment is optional (yeah, right), and must appear in the table of contents; we also put the title at the top of the page.

\renewenvironment{abstract}{%
  \if@openright\cleardoublepage\else\clearpage\fi
  \phantomsection
  \pagestyle{plain}\
  \begin{center}
  \{\large\bfseries\MakeUppercase{\@title}\par
  \par\vspace{1.25\topskip}\%
  \@author
  \par\vspace{\topskip}\%
  \ifco@chairs
    Dr.\`\@firstchair\ and Dr.\`\@secondchair, \thesis@type\ Supervisors \par
  \else
  Dr.\`\@chair, \thesis@type\ Supervisor \par
  \fi
  \par\vspace{2\topskip}\%
  \MakeUppercase{\bfseries\expandafter{\abstractname}}%}

This adds the abstract to the Table of Contents and fixes its entry in the PDF outline as well.

\addcontentsline{toc}{chapter}{\MakeUppercase{\abstractname}}%
  \{\texorpdfstring{\MakeUppercase{\abstractname}}{\abstractname}}%
  \end{center} \par \addvspace{-0.75\topskip}%
  \begin{doublespace}%
  \indent
  \} %\par\end{doublespace}}

vita  A Vita is required for dissertations.

\newif\ifvita@present
\vita@presentfalse
\newenvironment{vita}{\chapter{Vita}}{\global\vita@presenttrue}
\{\global\vita@presenttrue\}

Check for missing vita in a dissertation

\AtEndDocument{%
  \ifis@dissertation
    \ifvita@present\relax
    \else
      \ClassWarningNoLine{MUthesis}{No `vita' environment found; a vita is required for dissertations}%
  \fi}
Because so many packages redefine the \texttt{thebibliography} environment, we redefine it to match the graduate school’s requirement at the beginning of the document, after any packages. This should make it compatible with things like \texttt{chapterbib}, though this has not been tested.

\let\MUthesis@bib@name\bibname
\newcommand*{\refname}{References}\
\newif\ifMUthesis@use@chapterbib
\MUthesis@use@chapterbibfalse
\newif\ifMUthesis@use@natbib
\MUthesis@use@natbibfalse

We use numbers in bibliographies as “1.” rather than “[1]” here; if using \texttt{natbib}, we redefine \texttt{\bibnumfmt} after \texttt{\begin{document}} instead.

\renewcommand*{\@biblabel}[1]{\hfill #1.}\
We use \texttt{\bibsection} here so that \texttt{natbib} uses it when the time comes. It is redefined at \texttt{\begin{document}} to override \texttt{natbib}'s wishes.

\newcommand{\bibsection}{}
\AtBeginDocument{\@ifpackageloaded{chapterbib}{\MUthesis@use@chapterbibtrue}{\MUthesis@use@chapterbibfalse}{\if\MUthesis@use@chapterbib\if\@backmatter\chapter{\bibname}\let\MUthesis@bib@name\bibname\else\section*{\refname}\addcontentsline{toc}{section}{\protect\numberline{}\refname}\let\MUthesis@bib@name\refname\fi\else\chapter{\bibname}\if\@backmatter\relax\else\backmatter\fi\fi\@mkboth{\MakeUppercase{\MUthesis@bib@name}}{\MakeUppercase{\MUthesis@bib@name}}}{\singlespacing}
\renewenvironment{thebibliography}[1]{\bibsection\if\MUthesis@use@natbib\else\fi\begin{document}\egin{verse}}{}}
If we have per-chapter bibliographies (with `chapterbib`), we redefine the bibitem code so that there are no numbers in the main bibliography.

```tex
\if@backmatter
  \let\NAT@bibitem@first@sw\@firstoftwo
  \let\citeN\cite \let\shortcite\cite
  \let\citeasnoun\cite
\fi
```

The rest is from `report.cls` and/or `natbib.sty`.

```
A FIXME should these next two lines be there?
\sloppy
\interlinepenalty=10000
```

The rest is from `report.cls` and/or `natbib.sty`.

```
\let\NAT@bibitem@first@sw\@firstoftwo
\let\citeN\cite \let\shortcite\cite
\let\citeasnoun\cite
```

26
This code makes the `nomencl` package compatible with this class. The command \listofsymbols is an alias for \printnomenclature.

We redefine the appropriate commands from the `glossaries` package, if it has been loaded, for compatibility with this class.
We redefine \texttt{\printindex} for compatibility with this class if \texttt{makeidx} has been included.

\begin{verbatim}
\AtBeginDocument{%
\@ifpackageloaded{makeidx}{%
  \ClassWarningNoLine{MUthesis}{Redefining the index to fit with MUthesis.cls}%
  \let\old@printindex\printindex
  \renewcommand{\printindex}{%
    \if@openright\cleardoublepage\else\clearpage\fi
    \singlespacing
    \addcontentsline{toc}{chapter}{\texttt{\MakeUppercase{\indexname}}}\indexname}
  \old@printindex
}\}%
\}
\end{verbatim}

4.9 Commands and environments for front matter

\begin{verbatim}
\degree\copyrightyear
\chair\cochairs\firstreader\secondreader\thirdreader\fourthreader\fifthreader\sixthreader
\illustration\illustrationname\listillustrationname\theillustration
\end{verbatim}

These commands are the user interface; their function is to store names and dates for future use on the title page, copyright page, and approval page.

```latex
\newcommand*{\degree}[2]{\gdef\@degree{#1}\gdef\@degreeabbrv{#2}}
\let\copyright@year\relax
\def\copyright@year{\ClassWarningNoLine{MUthesis}{No copyright year given}}
\newcommand*{\copyrightyear}[1]{\gdef\copyright@year{#1}}
```

Commands used to define the thesis/dissertation committee.

```latex
\newif\co@chairs\co@chairsfalse
\newcommand*{\chair}[1]{\gdef\@chair{#1}\co@chairsfalse}
\newcommand*{\cochairs}[2]{\gdef\@firstchair{#1}\gdef\@secondchair{#2}\co@chairstrue}
\newif\second@reader\second@readerfalse
\newcommand*{\secondreader}[1]{\gdef\@secondreader{#1}\second@readertrue}
\newif\third@reader\third@readerfalse
\newcommand*{\thirdreader}[1]{\gdef\@thirdreader{#1}\third@readertrue}
\newif\fourth@reader\fourth@readerfalse
\newcommand*{\fourthreader}[1]{\gdef\@fourthreader{#1}\fourth@readertrue}
\newif\fifth@reader\fifth@readerfalse
\newcommand*{\fifthreader}[1]{\gdef\@fifthreader{#1}\fifth@readertrue}
\newif\sixth@reader\sixth@readerfalse
\newcommand*{\sixthreader}[1]{\gdef\@sixthreader{#1}\sixth@readertrue}
```

Define an illustration environment and the associated list of illustrations. These are essentially the same as the table and figure environments.
Define a scheme environment and the associated list of schemes for chemically reacting systems. These are essentially the same as the table and figure environments, too.
4.10 Page numbers in the PDF

To get page numbers in the PDF, I use hyperref’s pdfpagelabels option. The hyperpages option uses the implicit=false and draft options to hyperref so that links are not enabled but the pages still have the correct labels in the PDF. The user could re-enable this later using hyperref’s commands, but it is better to use the hyper option to the document class. The nohyper option prevents the document class from loading hyperref, just in case anyone has trouble.
\providecommand*{\pdfbookmark}{}

Start the document in "frontmatter" mode by default
\AtBeginDocument{\frontmatter}

\section*{Change History}

\begin{itemize}
\item[v0.1] General: Initial internal version \ldots \hspace{1cm} 1
\item[v0.2] \begin{itemize}
\item \texttt{\backmatter}: Print a warning if still in frontmatter when \texttt{\backmatter} occurs \ldots \hspace{1cm} 18
\item \texttt{\thebibliography}: Force \texttt{\backmatter} at start of \thebibliography \hspace{1cm} 25
\end{itemize}
\item[v0.3] \begin{itemize}
\item \texttt{\appendix}: Fixed a bug (stray \texttt{\backmatter}) so appendices still have letters \hspace{1cm} 17
\item Fixed bug regarding "Appendix" in ToC \hspace{1cm} 17
\item \texttt{\approvalpage}: Fixed spacing \hspace{1cm} 20
\item \texttt{\mainmatter}: Fixed bug regarding "Chapter" in ToC \hspace{1cm} 18
\item General: Deleted rogue \texttt{\renewcommand} in nohyphen option \hspace{1cm} 11
\item Made default size 12 and fixed the passing of the size to \texttt{report.cls} \hspace{1cm} 11
\item Made glosaries package work with this class \hspace{1cm} 27
\item Made makeidx package work with this class \hspace{1cm} 27
\item Minor tweak to vertical spacing on title page \hspace{1cm} 19
\item Redefined \texttt{\section}, \texttt{\subsection}, etc. to be consistent \hspace{1cm} 14
\item \texttt{\thebibliography}: Fix bibliography entry spacing \hspace{1cm} 25
\end{itemize}
\item[v0.4] \begin{itemize}
\item \texttt{\approvalpage}: Corrected omitted word “hereby” on approval page \hspace{1cm} 20
\item General: Made captioning more compatible with custom settings of caption package \hspace{1cm} 17
\item \texttt{abstract}: Make Abstract heading appear in ToC \hspace{1cm} 24
\end{itemize}
\item[v0.5] General: Tweaked \texttt{\floatpagefraction} and reset \texttt{\textfraction} and \texttt{\topfraction} \hspace{1cm} 12
\item[v0.6] \begin{itemize}
\item \texttt{\appendix}: Moved \texttt{\cleardoublepage} to top of \texttt{\appendix} so "Appendix" appears at correct place in ToC \hspace{1cm} 17
\item \texttt{\mainmatter}: Moved \texttt{\cleardoublepage} to top of \texttt{\mainmatter} so "Chapter" appears at correct place in ToC \hspace{1cm} 18
\item General: Added environments for illustrations and schemes and made adjustments to be compatible with \texttt{float} package \hspace{1cm} 28
\item \texttt{\acknowledgments}: Added check to remind user to include acknowledgments if they are absent \hspace{1cm} 23
\item \texttt{vita}: Added check to remind user to include vita if it is absent for a dissertation \hspace{1cm} 24
\end{itemize}
\item[v1.0] \begin{itemize}
\item \texttt{\@chapter}: Removed addvspace commands from \texttt{\@chapter} for \texttt{lof} and \texttt{lot}; they do not do anything for this class \hspace{1cm} 13
\item General: Fixed \texttt{\cleardoublepage} occurrences to account for openright setting \hspace{1cm} 1
\item Initial public release \hspace{1cm} 1
\item \texttt{abstract}: Tweaked font of title and spacing on Abstract page \hspace{1cm} 24
\item \texttt{\acknowledgments}: Fixed a bug with the last page of a 2+ page
\end{itemize}
\end{itemize}


Acknowledgments section having no page number ... 23

thebibliography: Modified thebibliography to work with chapterbib and natbib ... 25

v1.1
\@chapter: Added
\texorpdfstring for hyperref compatibility; without this, the PDF outline will not work. ... 13
\acronymname: Added
\texorpdfstring to ensure hyperref compatibility ... 27
\approvalpage: Added tweaks to page numbering for hyperref compatibility ... 20
\chapter: Modifications for hyperref compatibility ... 13
\copyrightpage: Changed page numbering to create a unique page number (c) for the copyright page in the PDF ... 19
\maketitle: Added a bookmark and a new page number to help with hyperref compatibility ... 19
\printindex: Added \texorpdfstring for hyperref compatibility ... 27
\tableofcontents: Defined the command \pdfbookmark (overridden by hyperref, if loaded) to make sure Contents appear in the PDF outline ... 15
\abstract: Added \phantomsection and \texorpdfstring to avoid conflicts with hyperref ... 24
\dedication: Fixed PDF page numbering on dedication page ... 22
\epigraph: Fixed PDF page numbering on epigraph page ... 22

v1.2
\textsize: Added comprehensive class option ... 11
General: Added $\documentclass$ macro to handle comprehensive exams ... 10
Moved loading of hyperref to the end of the class, so that it's the last package loaded (fixing a bug with the appendix in the PDF outline). ... 30
\abstract: Tweaked spacing on Abstract page again ... 24

v1.3
\setocindent: Removed the line that makes the Table of contents entries ragged-right ... 16

v1.4
\appendix: Fixed bug in local vs. global setting of tocdepth after an appendix ... 17
\micro: Put $\degree$ and \micro after \begin{document} so as to prevent conflicts with user-defined macros ... 11
\tableofcontents: Set the first page of the table of contents ... 15

General: Removed the copyright and approval pages from documents created with the comprehensive option and fixed page numbers in comprehensives without acknowledgments (most of them...) ... 11

v1.5
\copyrightpage: Fixed page numbering of copyright page, which threw off the page numbering on subsequent pages ... 19

General: Changed page numbers on copyright, approval, dedication, etc. pages (prior to Acknowledgments) to avoid problems with two-sided documents and changed most frontmatter commands to make them work with two-sided documents in which the frontmatter reverses the odd and even pages’ formats ... 1

\acknowledgments: Added commands to switch the layout of even and odd pages and redefined things so that all frontmatter after Acknowledgments starts on even numbered pages that are actually printed as odd numbered pages in the PDF. ... 22

v1.6
\copyrightpage: Added “Copyright” to PDF bookmarks if hyperref is loaded ... 19
\dedication: Added “Dedication Page” to PDF bookmarks if
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.

### Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>.</td>
<td>665</td>
</tr>
<tr>
<td>@chapter</td>
<td>%chapter</td>
<td>91, 95</td>
</tr>
<tr>
<td>@dotsep</td>
<td>%dotsep</td>
<td>136, 211</td>
</tr>
<tr>
<td>\dottedtocline</td>
<td>%dottedtocline</td>
<td>146, 192, 247</td>
</tr>
<tr>
<td>@makechapterhead</td>
<td>%makechapterhead</td>
<td>109, 111, 114</td>
</tr>
<tr>
<td>@makeschapterhead</td>
<td>%makeschapterhead</td>
<td>127</td>
</tr>
<tr>
<td>\abovecaptionskip</td>
<td>%abovecaptionskip</td>
<td>250</td>
</tr>
<tr>
<td>\abstract (environment)</td>
<td>%abstract</td>
<td>4, 545</td>
</tr>
<tr>
<td>\abstractname</td>
<td>%abstractname</td>
<td>561, 563, 564</td>
</tr>
<tr>
<td>\ackname</td>
<td>%ackname</td>
<td>526, 528</td>
</tr>
<tr>
<td>acknowledgments (environment)</td>
<td>%acknowledgments</td>
<td>4, 485</td>
</tr>
<tr>
<td>\acronymname</td>
<td>%acronymname</td>
<td>700</td>
</tr>
<tr>
<td>\addtolength</td>
<td>%addtolength</td>
<td>401</td>
</tr>
<tr>
<td>\appendix</td>
<td>%appendix</td>
<td>4, 295</td>
</tr>
<tr>
<td>\appendixname</td>
<td>%appendixname</td>
<td>260, 265</td>
</tr>
<tr>
<td>\approvalpage</td>
<td>%approvalpage</td>
<td>3, 39, 388</td>
</tr>
<tr>
<td>\author</td>
<td>%author</td>
<td>1, 3</td>
</tr>
<tr>
<td>\backmatter</td>
<td>%backmatter</td>
<td>5, 300, 613</td>
</tr>
<tr>
<td>\belowcaptionskip</td>
<td>%belowcaptionskip</td>
<td>250</td>
</tr>
<tr>
<td>\bibcite</td>
<td>%bibcite</td>
<td>651, 657</td>
</tr>
<tr>
<td>\bibcleanup</td>
<td>%bibcleanup</td>
<td>678</td>
</tr>
<tr>
<td>\bibfont</td>
<td>%bibfont</td>
<td>622</td>
</tr>
<tr>
<td>\bibliography</td>
<td>%bibliography</td>
<td>5</td>
</tr>
<tr>
<td>\bibname</td>
<td>%bibname</td>
<td>584, 604, 605, 612</td>
</tr>
<tr>
<td>\bibnumfmt</td>
<td>%bibnumfmt</td>
<td>598, 645</td>
</tr>
<tr>
<td>\bibpostamble</td>
<td>%bibpostamble</td>
<td>673</td>
</tr>
<tr>
<td>\bipreamble</td>
<td>%bipreamble</td>
<td>621</td>
</tr>
<tr>
<td>\bibsection</td>
<td>%bibsection</td>
<td>591, 601, 619</td>
</tr>
<tr>
<td>\caption</td>
<td>%caption</td>
<td>1, 250</td>
</tr>
<tr>
<td>\captionsetup</td>
<td>%captionsetup</td>
<td>1, 253</td>
</tr>
<tr>
<td>\chapter</td>
<td>%chapter</td>
<td>1, 4, 86, 114, 127, 184, 224, 237, 528, 573, 604, 612, 688, 777, 807, 824</td>
</tr>
<tr>
<td>\chaptermark</td>
<td>%chaptermark</td>
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