The mines-thesis class [*]

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Abstract

This package provides a class for graduate students at Colorado School of Mines to prepare their theses and dissertations.

Contents

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[*]This document corresponds to mines-thesis v1.0, dated 2020/01/10.

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1 User's guide

1.1 Installation

1.2 Invocation and options

\documentclass   The mines-thesis class is invoked in the standard fashion.

> \documentclass[⟨*options*⟩]{mines-thesis}

There are several options corresponding to the type of the document and its general appearance. They are described below. Generally speaking, the options have `key=value` forms, for example,

> \documentclass[10pt]{mines-thesis}

The default options are letterpaper,12pt. **TODO review? oneside? onecolumn,draft,openany**

1.3 Preprogrammed Formats

\title
\author
\year
\degree
\advisor
\coadvisor
\department
\departmenthead

abstract   The environment `abstract` must *precede* the `\makefrontmatter` command. Again, this is different from the standard LaTeX. Putting `abstract` after `\makefrontmatter` will trigger an error.

> \begin{abstract}
> *Here goes the abstract...*
> \end{abstract}

\makefrontmatter   The front matter of a thesis includes:

1. Title page (Required)

2. Copyright page

3. Submittal page (Required)

4. Abstract (Required)

5. Table of Contents (Required)

6. Lists (Required if included in thesis)

   (a) List of Figures

(b) List of Tables

(c) List of Equations (optional)

(d) List of Plates

(e) List of Symbols

7. Acknowledgments

8. Dedication

Invoking

    \makefrontmatter

will generate all components listed above. It can be commentted out until you need the front matter generated.

`\chapter`
`\section`
`\subsection`
`\subsubsection`
`\paragraph`
`pdflandscape`

Try the `lscape` package: `lscape.sty` Produce landscape pages in a (mainly) portrait document. This modifies the margins and rotates the page contents but not the page number. Useful, for example, with large multipage tables, and is compatible with the packages longtable and supertabular. If you are using pdfLaTeX, you should use `pdflscape` instead. The pdflscape package adds PDF support to the landscape environment of package lscape, by setting the PDF/Rotate page attribute. Pages with this attribute will be displayed in landscape orientation by conforming PDF viewers:

    begin{pdflandscape}
    Here goes the figure or table...
    \end{pdflandscape}

=== Set-up
=== `\OnehalfSpacing`
`\OnehalfSpacing* \DoubleSpacing \DoubleSpacing*` Text will be double spaced or 1.5 spaced. Sometimes it is also required to make page notes and floats (including captions) in 'double' spacing. The starred version of the two macros above takes care of this.

2 Implementation

```
1 \RequirePackage{ifthen}
```

The \collect@body macro in amsmath is defined using \def. We load environ to access the \long version of this command

```
2 \RequirePackage{environ}
```

```
3 \RequirePackage{pdflscape,everypage}
```

The review boolean is defined here for use with the class options.

```
4 \newboolean{review}
```

2.1 Declaration of Options

```
5 \DeclareOption{draft}{\setboolean{review}{true}}
6 \DeclareOption{final}{\setboolean{review}{false}
7 \PassOptionsToClass{final,12pt,onecolumn,openany}{memoir}}
8 \DeclareOption*{
9 \PassOptionsToClass{\CurrentOption}{memoir}
10 }
11 \ExecuteOptions{final}
```

2.2 Execution of Options

```
12 \ProcessOptions\relax
```

2.3 Package Loading

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

2.4 Main Code

Prevent LaTeX from hyphenating the entire document

\if@afterindent LaTeX uses the switch \if@afterindent to decide whether to indent after a section heading. We just need to make sure that this is always true.

```
14 %
15 ⟨*class⟩
16 \let\@afterindentfalse\@afterindenttrue
17 \@afterindenttrue
18 ⟨/class⟩
19 %
```

2.4.1 Commands to define parameters for the front matter

```
20 \newboolean{auto} % for auto pyramid
21 \setboolean{auto}{false}

22 \def\year#1{\gdef\@year{#1}}
23 \newcommand{\degree}[2]{\gdef\@degreelv{#1}\gdef\@degreename{#2}}
24 \def\advisor#1{\gdef\@advisor{#1}}
25 \def\coadvisor#1{\gdef\@coadvisor{#1}}
26 \def\department#1{\gdef\@department{#1}}
27 \def\departmenthead#1{\gdef\@departmenthead{#1}}
```

The following are the initial values for some macros that provide info.

```
28 \gdef\@author{Your Name}
29 \gdef\@title{This is the first line of a  medium length title,
30 this is the second line}
31 \gdef\@year{2020}
32 \gdef\@degreelv{Doctor of Philosophy}
33 \gdef\@degreename{Computer Science}
34 \gdef\@advisor{Dr. Main Advisor}
35 % ^^A \gdef\@coadvisor{Dr. Co Advisor}
36 \gdef\@department{Department of Some Name}
37 \gdef\@departmenthead{Dr. Department Head}
```

Set margins

```
38 % ^^A automatically set by the class option letterpaper
39 % ^^A \setstocksize{11in}{8.5in}
40 % ^^A set paper size equal to stock size
41 % ^^A\settrimmedsize{\stockheight}{\stockwidth}{*}
42 % ^^A set equal trim at the top and bottom
43 % ^^A \setlength{\trimtop}{\stockheight} % \trimtop = \stockheight
44 % ^^A \addtolength{\trimtop}{-\paperheight} % - \paperheight
45 % ^^A \setlength{\trimedge}{\stockwidth} % \trimedge = \stockwidth
46 % ^^A \addtolength{\trimedge}{-\paperwidth} % - \paperwidth
47 % ^^A \settrims{0.5\trimtop}{\trimedge}
48 \setpagecc{11in}{8.5in}{*}
49 % ^^A \settypeblocksize{\paperheight}{\paperwidth}{*}
50 \setlrmarginsandblock{1in}{*}{*}
51 \setulmarginsandblock{1in}{*}{*}
52 \setheadfoot{\onelineskip}{2\onelineskip}
53 \setheaderspaces{*}{2\onelineskip}{*}
54 \DoubleSpacing
55 \setlength{\parindent}{2em}
56 \checkandfixthelayout
57
```

2.4.2   Front Matter

\makefrontmatter

```
58 \newcommand{\makefrontmatter}{
59 \pagenumbering{roman}
60 \pagestyle{empty}
61 \maketitlepage
62 \makecopyrightpage
63 \pagestyle{plain}
64 \setcounter{page}{2}
65 \makesubmittalpage
66 \makeabstractpage
67 \maketoc
68 \makeacknowledgepage
69 \makededicationpage
70 \pagenumbering{arabic}
71 \setcounter{page}{1}
```

```
72 }
```

`\maketitlepage` The thesis title must be in all upper case letters, be centered on the page both horizontally and vertically, be in an inverted pyramid shape and the font size needs to be the same size as all other font in the main text (i.e. do not make the font size larger).

```
73 \DeclareRobustCommand{\invpyr}[1]{
74 \vbox{
75 \vspace{10pt}
76 \hsize=\textwidth
77 \parindent=\z@
78 \emergencystretch=1in
79 \parshape 6
80 0.01\textwidth .98\textwidth
81 0.1\textwidth .8\textwidth
82 0.15\textwidth .7\textwidth
83 0.2\textwidth .6\textwidth
84 0.25\textwidth .5\textwidth
85 0.3\textwidth .4\textwidth
86 \leftskip=\z@ plus 1fil
87 \rightskip=\z@ plus -1fil
88 \parfillskip=\z@ plus 2fil
89 #1\par
90 }
91 }
92 \newcommand{\autotitle}{\setboolean{auto}{true}}
93 \newcommand{\maketitlepage}{
94 \clearpage
95 \begin{vplace}
96 \centering
97 \ifthenelse{\boolean{auto}}
98 {\invpyr{\MakeUppercase{\@title}}}
99 {\@title}
100 \end{vplace}
101 \begin{center}
102 by\\
103 \@author
104 \end{center}
105 \clearpage
106 }
```

`\makecopyrightpage` Copyright Page. This is an optional page that follows the title page. No displayed page number, centered upper and lower case text.

```
107 \newcommand{\makecopyrightpage}{
108 \clearpage
109 \begin{vplace}[0.8]
110 \centering
111 Copyright~by~\@author~\@year\\
112 All~Rights~Reserved
```

```
113 \end{vplace}
114 \clearpage
115 }
```

\makesubmittalpage   Submittal Page. This is a required page that displays the Roman numeral ii page number. Beginning with this page, front matter Roman numeral page numbers are centered 1/2 inch from the bottom edge of page. All signatures are required before the final thesis format review.

```
116 \newcommand{\makesubmittalpage}{
117 \clearpage
118 A thesis submitted to the Faculty and the Board of
119 Trustees of the Colorado School of Mines in partial
120 fulfillment of the requirements for the degree of
121 {\@degreelv} ({\@degreename}).
122
123 \vspace{2em}
124 \begin{flushleft}
125 Golden, Colorado\\[.5em]
126 Date \underline{\hspace{2in}}
127 \end{flushleft}
128
129 \vspace{.5em}
130 \begin{flushright}
131 Signed: \underline{\hspace{2in}}\\
132 {\@author}\\[2em]
133
134 Signed: \underline{\hspace{2in}}\\
135 \begin{SingleSpace}
136 {\@advisor}\\
137 Thesis Advisor\\[2em]
138 \end{SingleSpace}
139
140
141 \@ifundefined{@coadvisor}
142 {
143 \vspace{2.5em}
144 }
145 {
146 Signed: \underline{\hspace{2in}}\\
147 \begin{SingleSpace}
148 {\@coadvisor}\\
149 Thesis Advisor
150 \end{SingleSpace}
151 }
152
153 \end{flushright}
154
155 \begin{flushleft}
156 Golden, Colorado\\[.5em]
```

```
157 Date \underline{\hspace{2in}}
158 \end{flushleft}
159
160 \vspace{.5em}
161 \begin{flushright}
162 Signed: \underline{\hspace{2in}}\\
163
164 \begin{SingleSpace}
165 {\@departmenthead}\\
166 Professor and Head\\
167 {\@department}
168 \end{SingleSpace}
169
170 \end{flushright}
171
172 \clearpage
173 }
```

abstract   We redifine the `abstract` environment. First, we need to save the text

```
174 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{}
```

\@saveabstract   And saving the abstract

```
175 \newcommand{\@saveabstract}[1]{
176 \long\gdef\@abstract{#1}
177 }
```

\makeabstractpage   ABSTRACT (title) is centered horizontally, 1 keyboard return below 1 inch top margin and in ALL UPPER CASE LETTERS. Each paragraph should be indented.

```
178 \newcommand{\makeabstractpage}{
179 \clearpage
180 \chapter*{Abstract}
181 \@abstract
182 \addcontentsline{toc}{chapter}{\abstractname}
183 \clearpage
184 }
```

acknowledgment   We difine the `acknowledgment` environment. First, we need to save the text

```
185 \newenvironment{acknowledgment}{\Collect@Body\@saveacknowledgments}{}
```

\@saveacknowledgments   And saving the acknowledgments

```
186 \newcommand{\@saveacknowledgments}[1]{
187 \long\gdef\@acknowledgments{#1}
188 }
```

\makeacknowledgepage   ACKNOWLEDGMENTS (Title) is centered horizontally, 1 keyboard return below 1 inch top margin and in ALL UPPER CASE LETTERS

```
189 \newcommand{\makeacknowledgepage}{
```

```
190 \@ifundefined{@acknowledgments}{}{
191 \clearpage
192 \chapter*{Acknowledgments}
193 \@acknowledgments
194 \addcontentsline{toc}{chapter}{ACKNOWLEDGMENTS}
195 \clearpage
196 }
197 }
```

dedication We difine the `dedication` environment. First, we need to save the text

```
198 \newenvironment{dedication}{\Collect@Body\@savededication}{}
```

\@savededication And saving the dedication

```
199 \newcommand{\@savededication}[1]{
200 \long\gdef\@dedication{#1}
201 }
```

\makededicationpage ACKNOWLEDGMENTS (Title) is centered horizontally, 1 keyboard return below 1 inch top margin and in ALL UPPER CASE LETTERS. Dedication Page: A dedication page is optional and not frequently included in a thesis. However, occasionally the thesis writer wants to dedicate the document to a professional colleague, friend, or relative. A dedication typically expresses gratitude for someone's support. If a dedication page is included, it is placed at the end of the front matter section, following the acknowledgments. Typically, a dedication page has no title, it simply states, e.g., "For my father." Roman numeral page numbering continues on the dedication page.

```
202 \newcommand{\makededicationpage}{
203 \@ifundefined{@dedication}{}{
204 \clearpage
205 \@dedication
206 \clearpage
207 }
208 }
```

We rename the headings for the toc, lof, and the references.

```
209 \renewcommand{\abstractname}{ABSTRACT}
210 \renewcommand{\chaptername}{CHAPTER}
211 \renewcommand{\appendixname}{APPENDIX}
212 \renewcommand{\contentsname}{TABLE OF CONTENTS}
213 \renewcommand{\listfigurename}{LIST OF FIGURES}
214 \renewcommand{\listtablename}{LIST OF TABLES}
215 %% for REFERENCE section
216 \renewcommand{\bibname}{REFERENCES}
```

\@dottedtocline@sec Redifine `\@dottedtocline` from the original `ltsect.dtx` `\@dottedtocline{⟨level⟩}{⟨indent⟩}{⟨numwidth⟩}{⟨title⟩}{⟨page⟩}`

```
217 \newcommand{\@dottedtocline@sec}[5]{%
218 \ifnum #1>\c@tocdepth \else
```

```
219 \begin{SingleSpace}
220 \vskip \z@ \@plus.2\p@
221 {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
222 \parindent #2\relax\@afterindenttrue
223 \interlinepenalty\@M
224 \leavevmode
225 \@tempdima #3\relax
226 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
227 {#4}\nobreak
228 \leaders\hbox{$\m@th
229 \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
230 mu$}\hfill
231 \nobreak
232 \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor #5}%
233 \par}
234 \end{SingleSpace}%
235 \fi}
```

\l@section \l@section{⟨*title*⟩}{⟨*page*⟩} typesets the ToC entry for a \section heading.

```
236 \renewcommand{\@dotsep}{1}
237 \renewcommand{\l@section}{
238 \@dottedtocline@sec{1}{1.5em}{2.3em}
239 }
240 \renewcommand{\l@figure}{
241 \@dottedtocline@sec{1}{1.5em}{2.3em}
242 }
243 \renewcommand{\l@table}{
244 \@dottedtocline@sec{1}{1.5em}{2.3em}
245 }
```

\l@chapapp Redefine the generic chapter/appendix ToC entry typesetting.

```
246 \renewcommand{\l@chapapp}[3]{%
247 \ifnum \c@tocdepth >\m@ne
248 \begin{SingleSpace}
249 \cftchapterbreak
250 \vskip \cftbeforechapterskip
251 {
252 \leftskip \cftchapterindent\relax
253 %%%      \memRTLleftskip \cftchapterindent\relax
254 \rightskip \@tocrmarg
255 %%%      \memRTLrightskip \@tocrmarg
256 \parfillskip -\rightskip
257 %%%      \parfillskip -\memRTLrightskip
258 \parindent \cftchapterindent\relax
259 \@afterindenttrue
260 \interlinepenalty\@M
261 \leavevmode
262 \let\@cftbsnum \cftchapterpresnum
263 \let\@cftasnum \cftchapteraftersnum
264 \let\@cftasnumb \cftchapteraftersnumb
```

```
265 \def\@chapapp@head{#3}%
266 \settowidth{\@tempdima}{\cftchapterfont\@chapapp@head}%
267 \addtolength{\@tempdima}{\cftchapternumwidth}%
268 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
269 %%%    \advance\memRTLleftskip \@tempdima \null\nobreak\hskip -\memRTLleftskip
270 {\cftchapterfont {#1}}\nobreak
271 \cftchapterfillnum{#2}}
272 \end{SingleSpace}
273 \fi}
274
275 \renewcommand{\cftchapterdotsep}{\cftdotsep}
276 \renewcommand{\cftchapterfont}{\normalfont\MakeUppercase}
277 \renewcommand{\cftchapterpagefont}{\normalfont}
278 \renewcommand{\cftchapterleader}{\cftdotfill{\cftchapterdotsep}}
279 \renewcommand{\cftchaptername}{\chaptername\space}
280 \renewcommand{\cftappendixname}{\appendixname\space}
281 \renewcommand{\cftdotsep}{1}
282 % ^^A no extra space before the entry, or in the LoF/LoT
283 \setlength{\cftbeforechapterskip}{\z@ plus \z@}
284 \renewcommand{\insertchapterspace}{}
```

\maketoc   TABLE OF CONTENTS (Title) is centered horizontally, 1 keyboard return below
            1 inch top margin and in ALL UPPER CASE LETTERS

```
285 \AtBeginDocument{
286 \@ifpackageloaded{hyperref}{
287 \settocpreprocessor{chapter}{%
288 \let\tempf@rtoc\f@rtoc%
289 \def\f@rtoc{%When hyperref is used,
290 \texorpdfstring{\MakeTextUppercase{\tempf@rtoc}}{\tempf@rtoc}}%
291 }
292 \renewcommand{\cftchapterfont}{\normalfont}
293 }{}
294 }
295 \newcommand{\maketoc}{
296 \tableofcontents*
297 \clearpage
298 \listoffigures
299 \clearpage
300 \listoftables
301 \clearpage
302 }
```

2.4.3   Main Body

\chapter

```
303 \makechapterstyle{mineschapter}{%
304 \setlength{\midchapskip}{.2\baselineskip}
305 \setlength{\afterchapskip}{.2\baselineskip}
```

```
306 \renewcommand{\chapnumfont}{\normalfont}
307 \renewcommand{\chaptitlefont}{\normalfont}
308 \renewcommand{\chapterheadstart}{}
309 \renewcommand{\printchapternum}{}
310 \renewcommand{\printchapternonum}{}
311 \renewcommand{\printchaptername}{%
312 \centerline{\chapnumfont\MakeUppercase{\@chapapp\ \thechapter}}}
313 \renewcommand{\printchaptertitle}[1]{%
314 \centering \vbox{\chaptitlefont\invpyr{\MakeUppercase{##1}}}
315 }
316 }
317 \chapterstyle{mineschapter}
```

\reproduceinfo   Information about the reproduced chapter.   Including the author, year, organization, publisher.

```
318 \newcommand{\reproduceinfo}[1]{
319 \begin{center}
320 #1\par
321 \end{center}
322 }
```

\reproduceabstract   One single line of Abstract flused left.

```
323 \newcommand{\reproduceabstract}{
324 {\noindent Abstract\par}
325 }
```

\footnote   Set the format for \footnote. One horizontal line to separate the text and the footnotes.

```
326 \AtBeginDocument{
327 \setlength{\footmarkwidth}{\z@}
328 \setlength{\footmarksep}{-\footmarkwidth}
329 \setlength{\footparindent}{\footmarkwidth}
330 \renewcommand{\footnoterule}{%
331 \kern .5\baselineskip%
332 \hrule width \columnwidth \kern .5\baselineskip}
333 }
```

\symbolfootnote   A new type of footnote command which use symbols instead of arabic numbers as markers

```
334 \newcommand{\symbolfootnote}[2]{
335 \renewcommand{\thefootnote}{\fnsymbol{footnote}}
336 \footnote[#1]{#2}
337 \renewcommand{\thefootnote}{\arabic{footnote}}
338 }
```

\section   Redefine \section, \subsection and \subsubsection.

```
339 \renewcommand{\section}{\@startsection{section}
340 {1} % level
341 {\z@} % indent from left margin
```

```
342 {.1ex} % skip above heading
343 {.1ex} % heading between title and text
344 {\normalfont\normalsize\bfseries}}
345 \renewcommand{\subsection}{\@startsection{subsection}
346 {1} % level
347 {\z@} % indent from left margin
348 {.1ex} % skip above heading
349 {.1ex} % heading between title and text
350 {\normalfont\normalsize\bfseries}}
351 \renewcommand{\subsubsection}{\@startsection{subsubsection}
352 {1} % level
353 {\z@} % indent from left margin
354 {.1ex} % skip above heading
355 {.1ex} % heading between title and text
356 {\normalfont\normalsize\bfseries}}
```

2.4.4 Back Matter

2.4.5 Others

Change the indent of References if `natbib` packadge is loaded.

```
357 \AtBeginDocument{
358 \@ifpackageloaded{natbib}{
359 \setlength{\bibhang}{\parindent}
360 \renewcommand{\bibpreamble}{\vspace{\baselineskip}}
361 }{}
362 }
```

pdflandscape   We define the `pdflandscape` to handle the page numbering in landscape mode.

```
363 \AtBeginDocument{
364 \@ifpackageloaded{pdflscape}{
365 \newcommand{\Lpagenumber}{\ifdim\textwidth=\linewidth\else\bgroup
366 \dimendef\margin=0 %use \margin instead of \dimen0
367 \ifodd\value{page}\margin=\oddsidemargin
368 \else\margin=\evensidemargin
369 \fi
370 \raisebox{\dimexpr -\topmargin-\headheight-\headsep-0.5\linewidth}[0pt][0pt]{%
371 \rlap{\hspace{\dimexpr \margin+\textheight+\footskip}%
372 \llap{\rotatebox{90}{\thepage}}}}%
373 \egroup\fi
374 }
375 \@ifpackageloaded{everypage}{
376 \AddEverypageHook{\Lpagenumber}%
377 \newenvironment{pdflandscape}{
378 \begin{landscape}\pagestyle{empty}}{
379 \end{landscape}
380 \pagestyle{plain}}
381 }{}
382 }{}
383 }
```