

# 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.

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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[\langle options \rangle]{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[screen=true, review=false]{mines-thesis}
```

The default options are `letterpaper,12pt. TODO review? oneseide? onecol-umn,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 L<sup>A</sup>T<sub>E</sub>X. 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 commented out until you need the front matter generated.

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

===== 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}
```

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

```
3 \newboolean{review}
```

### 2.1 Declaration of Options

```
4 \DeclareOption{draft}{\setboolean{review}{true}}
```

```
5 \DeclareOption{final}{\setboolean{review}{false}}
```

```
6 \PassOptionsToClass{final,12pt,onecolumn,openany}{memoir}}
```

```
7 \DeclareOption*
```

```
8 \PassOptionsToClass{\CurrentOption}{memoir}
```

```
9 }
```

```
10 \ExecuteOptions{final}
```

### 2.2 Execution of Options

```
11 \ProcessOptions\relax
```

### 2.3 Package Loading

```
12 \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.

```
13 %
```

```
14 < *class>
```

```
15 \let\@afterindentfalse\@afterindenttrue
```

```
16 \@afterindenttrue
```

```
17 < /class>
```

```
18 %
```

#### 2.4.1 Commands to define parameters for the front matter

```
19 \newboolean{auto} % for auto pyramid
```

```
20 \setboolean{auto}{false}
```

```
21 \def\year#1{\gdef\@year{#1}}
```

```
22 \newcommand{\degree}[2]{\gdef\@degreeelv{#1}\gdef\@degreename{#2}}
```

```
23 \def\advisor#1{\gdef\@advisor{#1}}
```

```
24 \def\coadvisor#1{\gdef\@coadvisor{#1}}
```

```
25 \def\department#1{\gdef\@department{#1}}
```

```
26 \def\departmenthead#1{\gdef\@departmenthead{#1}}
```

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

```

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

Set margins
37 % ^^A automatically set by the class option letterpaper
38 % ^^A \setstocksize{11in}{8.5in}
39 % ^^A set paper size equal to stock size
40 % ^^A \settrimmedsize{\stockheight}{\stockwidth}{*}
41 % ^^A set equal trim at the top and bottom
42 % ^^A \setlength{\trimtop}{\stockheight} % \trimtop = \stockheight
43 % ^^A \addtolength{\trimtop}{-\paperheight} % - \paperheight
44 % ^^A \setlength{\trimedge}{\stockwidth} % \trimedge = \stockwidth
45 % ^^A \addtolength{\trimedge}{-\paperwidth} % - \paperwidth
46 % ^^A \settrims{0.5\trimtop}{\trimedge}
47 \setpageecc{11in}{8.5in}{*}
48 % ^^A \settypeblocksize{\paperheight}{\paperwidth}{*}
49 \setlrmarginsandblock{1in}{*}{*}
50 \setulmarginsandblock{1in}{*}{*}
51 \setheadfoot{\onelineskip}{2\onelineskip}
52 \setheaderspaces{*}{2\onelineskip}{*}
53 \DoubleSpacing
54 \checkandfixthelayout
55

```

## 2.4.2 Front Matter

`\makefrontmatter`

```

56 \newcommand{\makefrontmatter}{
57 \pagenumbering{roman}
58 \pagestyle{empty}
59 \maketitlepage
60 \makecopyrightpage
61 \pagestyle{plain}
62 \setcounter{page}{2}
63 \makesubmittalpage
64 \makeabstractpage
65 \maketoc
66 \pagenumbering{arabic}
67 \setcounter{page}{1}
68 }

```

`\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).

```

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

```

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

```

103 \newcommand{\makecopyrightpage}{
104 \clearpage
105 \begin{vplace}[0.8]
106 \centering
107 Copyright~by~\@author~\@year\\
108 All~Rights~Reserved
109 \end{vplace}
110 \clearpage
111 }

```

`\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.

```

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

```

```

157 \begin{flushright}
158 Signed: \underline{\hspace{2in}}\\
159
160 \begin{SingleSpace}
161 {\@departmenthead}\\
162 Professor and Head\\
163 {\@department}
164 \end{SingleSpace}
165
166 \end{flushright}
167
168 \clearpage
169 }

abstract We redefine the abstract enviroment. First, we need to save the text
170 \renewenvironment{abstract}{\Collect@Body\@saveabstract}{

\@saveabstract And saving the abstract
171 \newcommand{\@saveabstract}[1]{
172 \long\gdef\@abstract{#1}
173 }

\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.
174 \newcommand{\makeabstractpage}{
175 \clearpage
176 \chapter*{Abstract}
177 \@abstract
178 \addcontentsline{toc}{chapter}{ABSTRACT}
179 \clearpage
180 }

We rename the headings for the toc, lof, and the references.
181 \renewcommand\contentsname{Table of Contents}
182 \renewcommand\listfigurename{List of Figures}
183 \renewcommand\listtablename{List of Tables}

\@dottedtocline@sec Redefine \@dottedtocline from the original ltsect.dtx
\@dottedtocline{\level}{\indent}{\numwidth}{\title}{\page}
184 \newcommand{\@dottedtocline@sec}[5]{%
185 \ifnum #1>\c@tocdepth \else
186 \begin{SingleSpace}
187 \vskip \z@ \@plus.2\p@
188 {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
189 \parindent #2\relax\@afterindenttrue
190 \interlinepenalty\@M
191 \leavevmode
192 \@tempdima #3\relax

```



```

193 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
194 {#4}\nobreak
195 \leaders\hbox{$\m@th
196 \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
197 mu$}\hfill
198 \nobreak
199 \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor #5}%
200 \par}
201 \end{SingleSpace}%
202 \fi}

```

`\l@section` `\l@section{<title>}{<page>}` typesets the ToC entry for a `\section` heading.

```

203 \renewcommand{\@dotsep}{1}
204 \renewcommand{\l@section}{
205 \dottedtocline@sec{1}{1.5em}{2.3em}
206 }

```

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

```

207 \renewcommand{\l@chapapp}[3]{%
208 \ifnum \c@tocdepth >\m@ne
209 \begin{SingleSpace}
210 \cftchapterbreak
211 \vskip \cftbeforechapterskip
212 {
213 \leftskip \cftchapterindent\relax
214 %% \memRTLleftskip \cftchapterindent\relax
215 \rightskip \@tocrmarg
216 %% \memRTLrightskip \@tocrmarg
217 \parfillskip -\rightskip
218 %% \parfillskip -\memRTLrightskip
219 \parindent \cftchapterindent\relax
220 \@afterindenttrue
221 \interlinepenalty\@M
222 \leavevmode
223 \let\@cftbsnum \cftchapterpresnum
224 \let\@cftasnum \cftchapteraftersnum
225 \let\@cftasnumb \cftchapteraftersnumb
226 \def\@chapapp@head{#3}%
227 \settowidth{\@tempdima}{\cftchapterfont\@chapapp@head}%
228 \addtolength{\@tempdima}{\cftchapternumwidth}%
229 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
230 %% \advance\memRTLleftskip \@tempdima \null\nobreak\hskip -\memRTLleftskip
231 {\cftchapterfont {#1}}\nobreak
232 \cftchapterfillnum{#2}}
233 \end{SingleSpace}
234 \fi}
235
236 \renewcommand{\cftchapterdotsep}{\cftdotsep}
237 \renewcommand{\cftchapterfont}{\normalfont}

```

```

238 \renewcommand{\cftchapterpagefont}{\normalfont}
239 \renewcommand{\cftchapterleader}{\cftdotfill{\cftchapterdotsep}}
240 \renewcommand{\cftchaptername}{CHAPTER\space}
241 \renewcommand{\cftdotsep}{1}
242 % ^A no extra space before the entry, or in the LoF/LoT
243 \setlength{\cftbeforechapterskip}{\z@ plus \z@}
244 \renewcommand{\insertchapterspace}{}

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

245 \AtBeginDocument{
246 \@ifpackageloaded{hyperref}{
247 \settocpreprocessor{chapter}{%
248 \let\tempf@rtoc\footmarkwidth
249 \def\footmarkwidth{%When hyperref is used,
250 \texorpdfstring{\MakeTextUppercase{\tempf@rtoc}}{\tempf@rtoc}}%
251 }
252 }{}
253 \setlength{\footmarkwidth}{\z@}
254 \setlength{\footmarksep}{-\footmarkwidth}
255 \setlength{\footparindent}{\footmarkwidth}
256 \renewcommand{\footnoterule}{%
257 \kern .5\baselineskip
258 \hrule width \columnwidth \kern .5\baselineskip}
259 }
260 \newcommand{\maketoc}{
261 \tableofcontents*
262 \clearpage
263 }

264 \makechapterstyle{mineschapter}{%
265 \setlength{\midchapskip}{.2\baselineskip}
266 \setlength{\afterchapskip}{.2\baselineskip}
267 \renewcommand{\chapnumfont}{\normalfont}
268 \renewcommand{\chaptitelfont}{\normalfont}
269 \renewcommand{\chapterheadstart}{}
270 \renewcommand{\printchapternum}{}
271 \renewcommand{\printchapternonum}{}
272 \renewcommand{\printchaptername}{%
273 \centerline{\chapnumfont\MakeUppercase{\@chapapp\ thechapter}}}
274 \renewcommand{\printchaptertitle}[1]{%
275 \centering \vbox{\chaptitelfont\invpyr{\MakeUppercase{##1}}}
276 }
277 }
278 \chapterstyle{mineschapter}
279 \newcommand{\reproduceinfo}[1]{
280 \begin{center}
281 #1\\
282 \end{center}
283 }

```

```

284 \newcommand{\reproduceabstract}[1]{
285 \noindent Abstract
286
287 #1
288
289 }
290 \newcommand{\symbolfootnote}[2]{
291 \renewcommand{\thefootnote}{\fnsymbol{footnote}}
292 \footnote[#1]{#2}
293 \renewcommand{\thefootnote}{\arabic{footnote}}
294 }

```

\section This section of code re-defines some standard stuff for sanity.

```

295 \renewcommand{\section}{\@startsection{section}
296 {1} % level
297 {\z@} % indent from left margin
298 {.1ex} % skip above heading
299 {.1ex} % heading between title and text
300 {\normalfont\normalsize\bfseries}}
301 \renewcommand{\subsection}{\@startsection{subsection}
302 {1} % level
303 {\z@} % indent from left margin
304 {.1ex} % skip above heading
305 {.1ex} % heading between title and text
306 {\normalfont\normalsize\bfseries}}
307 \renewcommand{\subsubsection}{\@startsection{subsubsection}
308 {1} % level
309 {\z@} % indent from left margin
310 {.1ex} % skip above heading
311 {.1ex} % heading between title and text
312 {\normalfont\normalsize\bfseries}}

```