

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^AT_EX. 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` L^AT_EX 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\@degree{#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 \maketoc
65 \pagenumbering{arabic}
66 \setcounter{page}{1}
67 }

```

`\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).

```

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

```

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

```

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

```

`\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.

```

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

```

```

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

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

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

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

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

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

```



```

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

\l@section \l@section{<title>}{<page>} typesets the ToC entry for a \section heading.
202 \renewcommand{\@dotsep}{1}
203 \renewcommand{\l@section}{
204 \dottedtocline@sec{1}{1.5em}{2.3em}
205 }

\maketoc TABLE OF CONTENTS (Title) is centered horizontally, 1 keyboard return below
1 inch top margin and in ALL UPPER CASE LETTERS
206 \newcommand{\maketoc}{
207 \tableofcontents*
208 }

209 \makechapterstyle{mineschapter}{%
210 \setlength{\midchapskip}{.2\baselineskip}
211 \setlength{\afterchapskip}{.2\baselineskip}
212 \renewcommand{\chapnumfont}{\normalfont}
213 \renewcommand{\chapttitlefont}{\normalfont}
214 \renewcommand{\chapterheadstart}{}
215 \renewcommand{\printchapternum}{}
216 \renewcommand{\printchapternonum}{}
217 \renewcommand{\printchaptername}{%
218 \centerline{\chapnumfont\MakeUppercase{\@chapapp\ thechapter}}}
219 \renewcommand{\printchaptertitle}[1]{%
220 \centering \vbox{\chapttitlefont\invpyr{\MakeUppercase{##1}}}
221 }
222 }
223 \chapterstyle{mineschapter}

\section This section of code re-defines some standard stuff for sanity.
224 \renewcommand{\section}{\@startsection{section}
225 {1} % level
226 {\z@} % indent from left margin
227 {.1ex} % skip above heading
228 {.1ex} % heading between title and text
229 {\normalfont\normalsize\bfseries}}
230 \renewcommand{\subsection}{\@startsection{subsection}
231 {1} % level
232 {\z@} % indent from left margin

```

```

233 {.1ex} % skip above heading
234 {.1ex} % heading between title and text
235 {\normalfont\normalsize\bfseries}}
236 \renewcommand{\subsubsection}{\@startsection{subsubsection}
237 {1} % level
238 {\z@} % indent from left margin
239 {.1ex} % skip above heading
240 {.1ex} % heading between title and text
241 {\normalfont\normalsize\bfseries}}

```