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.

$$\verb|\documentclass[|\langle options \rangle\verb|]{mines-thesis}|$$

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,10pt. **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
```

=== 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{letterpaper,12pt,oneside,onecolumn,final,openany}{report}}`
7 `\DeclareOption*{`
8 `\PassOptionsToClass{\CurrentOption}{memoir}`
9 `}`
10 `\ExecuteOptions{draft,letterpaper,12pt}`

2.2 Execution of Options

11 `\ProcessOptions\relax`

2.3 Package Loading

12 `\LoadClassWithOptions{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\@degreelv{#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\@degreelv{Doctor of Philosophy}
32 \gdef\@degreename{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 \setpagecc{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 \hsize=\textwidth
72     \parindent=0pt
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=0pt plus 1fil
82     \rightskip=0pt plus -1fil
83     \parfillskip=0pt 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 {\@degreelv} ({\@degreename}).
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 redifine 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 \clearpage
178 }
```

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

```
179 \renewcommand\contentsname{Table of Contents}
180 \renewcommand\listfigurename{List of Figures}
181 \renewcommand\listtablename{List of Tables}

182 \newcommand{\contentsheader}[2] { \addtocontents{#1} {
183    \centerline{\underline{#2}\protect\hfill%
184       \underline{Page}}}}
185 \renewcommand\tableofcontents { \chapter*{\contentsname}
186   \addcontentsline{toc}{chapter}{Table of Contents}
187   \@starttoc{toc}}
188 \renewcommand\listoffigures { \chapter*{\listfigurename}
189   \addcontentsline{toc}{chapter}{List of Figures}
190   \@starttoc{lof}}
191 \renewcommand\listoftables { \chapter*{\listtablename}
192   \addcontentsline{toc}{chapter}{List of Tables}
193   \@starttoc{lot}}
```

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

```
194 \newcommand{\maketoc}{
195 \clearpage
196 \tableofcontents
197 \clearpage
198 }

199 \makechapterstyle{mineschapter}{%
200 \chapterstyle{default}
201 \setlength{\midchapskip}{5pt}
202 \setlength{\afterchapskip}{5pt}
203 \renewcommand*{\chapterheadstart}{}
204 \renewcommand*{\printchaptername}{%
205 \centerline{\chapnumfont{\@chapapp\ \thechapter}}}
206 \renewcommand*{\chapternamenum}{}
207 \renewcommand*{\chapnumfont}{\normalfont\MakeUppercase}
208 \renewcommand*{\printchapternum}{}
209 \renewcommand*{\printchapternonum}{%
210 \vphantom{\chapnumfont \@chapapp 1}\par
211 \parbox{0.5in}{}\par}
212 \renewcommand*{\chaptitlefont}{\normalfont}
213 \renewcommand*{\printchaptertitle}[1]{%
214 \centering \chaptitlefont\invpyr{\MakeUppercase{##1}}}
215 }
216 \chapterstyle{mineschapter}
```

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

```
217 \renewcommand{\section}{\@startsection {section}{1}{\z@}%
218                                 {-3.5ex \@plus -1ex \@minus -.2ex}%
219                                 {2.3ex \@plus.2ex}%
220                                 {\normalfont\normalsize\bfseries}}
221 \renewcommand{\subsection}{\@startsection {subsection}{1}{\z@}%
222                                 {-3.5ex \@plus -1ex \@minus -.2ex}%
223                                 {2.3ex \@plus.2ex}%
224                                 {\normalfont\normalsize\bfseries}}
225 \renewcommand{\subsubsection}{\@startsection {subsubsection}{1}{\z@}%
226                                 {-3.5ex \@plus -1ex \@minus -.2ex}%
227                                 {2.3ex \@plus.2ex}%
228                                 {\normalfont\normalsize\bfseries}}
```