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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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`
`landscape`

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{landscape}
Here goes the figure or table...
\end{landscape}
```

`\OnehalfSpacing`
`\DoubleSpacing`
`SingleSpace`

`\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   Frequently Asked Questions

Blank pages. If you use `landscape` and got extra blank pages, it if mostly because your figure is too large. You need to resize the height or width of the figure. For example, instead of `\includegraphics[width=\linewidth]{FigureName}`, you should use `\includegraphics[width=.6\linewidth]{FigureName}`

3   Implementation

3.1   Initial Code

These packages are useful when writing this `.dtx` file. The `\ifthenelse` macro controls many conditional logic command, So we load `ifthen` package. The `\collect@body` macro in `amsmath` is defined using `\def`. We load `environ` to access the `\long` version of this command.

```
1 \RequirePackage{ifthen}
2 \RequirePackage{environ}
```

3.1.1   Declaration of Options

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

```
3 \newboolean{review}

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}
```

3.1.2   Execution of Options

```
11 \ProcessOptions\relax
```

3.1.3   Package Loading

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

3.2   Main Code

3.2.1   Front Matter

`\makefrontmatter`   The `\makefrontmatter` will generate all front matter pages: `\maketitlepage` for Title Page, `\makecopyrightpage` for Copyright Page, `\makesubmittalpage` for Submittal Page, `\makeabstractpage` for Abstract, `\makecft` for Tables of Contents (toc) and Lists (List of Figures (lof) & List of Tables (lot)), `\makeacknowledgepage` for Acknowledgments, and `\makededicationpage` for Dedication.

```
13 \newcommand{\makefrontmatter}{
14 \pagenumbering{roman}
15 \pagestyle{empty}
16 \maketitlepage
17 \makecopyrightpage
18 \pagestyle{plain}
19 \setcounter{page}{2}
20 \makesubmittalpage
21 \makeabstractpage
22 \makecft
23 \makeacknowledgepage
24 \makededicationpage
25 \pagenumbering{arabic}
26 \setcounter{page}{1}
27 }

28 \newboolean{auto} % for auto pyramid
29 \setboolean{auto}{false}

30 \def\year#1{\gdef\@year{#1}}
31 \newcommand{\degree}[2]{\gdef\@degreelv{#1}\gdef\@degreename{#2}}
32 \def\advisor#1{\gdef\@advisor{#1}}
33 \def\coadvisor#1{\gdef\@coadvisor{#1}}
34 \def\department#1{\gdef\@department{#1}}
35 \def\departmenthead#1{\gdef\@departmenthead{#1}}
```

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

```
36 \gdef\@author{Your Name}
37 \gdef\@title{This is the first line of a  medium length title,
38 this is the second line}
39 \gdef\@year{2020}
40 \gdef\@degreelv{Doctor of Philosophy}
41 \gdef\@degreename{Computer Science}
42 \gdef\@advisor{Dr. Main Advisor}
43 % ^^A \gdef\@coadvisor{Dr. Co Advisor}
44 \gdef\@department{Department of Some Name}
45 \gdef\@departmenthead{Dr. Department Head}
```

Set margins

```
46 % ^^A automatically set by the class option letterpaper
47 % ^^A \setstocksize{11in}{8.5in}
48 % ^^A set paper size equal to stock size
49 % ^^A\settrimmedsize{\stockheight}{\stockwidth}{*}
50 % ^^A set equal trim at the top and bottom
51 % ^^A \setlength{\trimtop}{\stockheight} % \trimtop = \stockheight
52 % ^^A \addtolength{\trimtop}{-\paperheight} % - \paperheight
53 % ^^A \setlength{\trimedge}{\stockwidth} % \trimedge = \stockwidth
54 % ^^A \addtolength{\trimedge}{-\paperwidth} % - \paperwidth
55 % ^^A \settrims{0.5\trimtop}{\trimedge}
56 \setpagecc{11in}{8.5in}{*}
57 % ^^A \settypeblocksize{\paperheight}{\paperwidth}{*}
```

```
58 \setlrmarginsandblock{1in}{*}{*}
59 \setulmarginsandblock{1in}{*}{*}
60 \setheadfoot{\onelineskip}{2\onelineskip}
61 \setheaderspaces{*}{2\onelineskip}{*}
62 \DoubleSpacing
63 \setlength{\parindent}{2em}
64 \checkandfixthelayout
65
```

\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).

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

\makecopyrightpage Copyright Page. This is an optional page that follows the title page. No displayed

page number, centered upper and lower case text.

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

\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.

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

```
143 \end{SingleSpace}
144 }
145
146 \end{flushright}
147
148 \begin{flushleft}
149 Golden, Colorado\\[.5em]
150 Date \underline{\hspace{2in}}
151 \end{flushleft}
152
153 \vspace{.5em}
154 \begin{flushright}
155 Signed: \underline{\hspace{2in}}\\
156
157 \begin{SingleSpace}
158 {\@departmenthead}\\
159 Professor and Head\\
160 {\@department}
161 \end{SingleSpace}
162
163 \end{flushright}
164
165 \clearpage
166 }
```

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

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

\@saveabstract   And saving the abstract

```
168 \newcommand{\@saveabstract}[1]{
169 \long\gdef\@abstract{#1}
170 }
```

\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.

```
171 \newcommand{\makeabstractpage}{
172 \clearpage
173 \chapter*{Abstract}
174 \@abstract
175 \addcontentsline{toc}{chapter}{\abstractname}
176 \clearpage
177 }
```

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

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

\@saveacknowledgments   And saving the acknowledgments

```
179 \newcommand{\@saveacknowledgments}[1]{
```

```
180 \long\gdef\@acknowledgments{#1}
181 }
```

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

```
182 \newcommand{\makeacknowledgepage}{
183 \@ifundefined{@acknowledgments}{}{
184 \clearpage
185 \chapter*{Acknowledgments}
186 \@acknowledgments
187 \addcontentsline{toc}{chapter}{ACKNOWLEDGMENTS}
188 \clearpage
189 }
190 }
```

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

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

\@savededication And saving the dedication

```
192 \newcommand{\@savededication}[1]{
193 \long\gdef\@dedication{#1}
194 }
```

\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.

```
195 \newcommand{\makededicationpage}{
196 \@ifundefined{@dedication}{}{
197 \clearpage
198 \@dedication
199 \clearpage
200 }
201 }
```

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

```
202 \renewcommand{\l@chapapp}[3]{%
203 \ifnum \c@tocdepth >\m@ne
204 \begin{SingleSpace}
205 \cftchapterbreak
206 \vskip \cftbeforechapterskip
207 {
208 \leftskip \cftchapterindent\relax
```

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```
209 %%%     \memRTLleftskip \cftchapterindent\relax
210 \rightskip \@tocrmarg
211 %%%     \memRTLrightskip \@tocrmarg
212 \parfillskip -\rightskip
213 %%%     \parfillskip -\memRTLrightskip
214 \parindent \cftchapterindent\relax
215 \@afterindenttrue
216 \interlinepenalty\@M
217 \leavevmode
218 \let\@cftbsnum \cftchapterpresnum
219 \let\@cftasnum \cftchapteraftersnum
220 \let\@cftasnumb \cftchapteraftersnumb
221 \def\@chapapp@head{#3}%
222 \settowidth{\@tempdima}{\cftchapterfont\@chapapp@head}%
223 \addtolength{\@tempdima}{\cftchapternumwidth}%
224 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
225 %%%     \advance\memRTLleftskip \@tempdima \null\nobreak\hskip -\memRTLleftskip
226 {\cftchapterfont {#1}}\nobreak
227 \cftchapterfillnum{#2}}
228 \end{SingleSpace}
229 \fi}

230 \renewcommand{\cftchapterdotsep}{\cftdotsep}
231 \renewcommand{\cftchapterfont}{\normalfont\MakeTextUppercase}
232 \renewcommand{\cftchapterpagefont}{\normalfont}
233 \renewcommand{\cftchapterleader}{\cftdotfill{\cftchapterdotsep}}
234 \renewcommand{\cftchaptername}{\chaptername\space}
235 \renewcommand{\cftappendixname}{\appendixname\space}
236 \renewcommand{\cftdotsep}{1}
237 % ^^A no extra space before the entry, or in the LoF/LoT
238 \setlength{\cftbeforechapterskip}{\z@ plus \z@}
239 \renewcommand{\insertchapterspace}{}
240 % ^^A \renewcommand{\insertchapterspace}{
241 % ^^A  \addtocontents{lof}{\protect\addvspace{5pt}} % previous default 10pt
242 % ^^A   \addtocontents{lot}{\protect\addvspace{5pt}}
243 % ^^A }
```

\makecft   \makecft generates Table of Contents, List of Figures, and List of Tables. TABLE
OF CONTENTS (Title) is centered horizontally, 1 keyboard return below 1 inch
top margin and in ALL UPPER CASE LETTERS

```
244 \AtBeginDocument{
245 \@ifpackageloaded{hyperref}{
246 \settocpreprocessor{chapter}{%
247 \let\tempf@rtoc\f@rtoc%
248 \def\f@rtoc{%When hyperref is used,
249 \texorpdfstring{\MakeTextUppercase{\tempf@rtoc}}{\tempf@rtoc}}%
250 }
251 \renewcommand{\cftchapterfont}{\normalfont}
252 }{}
253 }
```

```
254 \newcommand{\makecft}{
255 \tableofcontents*
256 \clearpage
257 \listoffigures
258 \clearpage
259 \listoftables
260 \clearpage
261 } % end \makecft
```

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

```
262 \renewcommand{\abstractname}{ABSTRACT}
263 \renewcommand{\chaptername}{CHAPTER}
264 \renewcommand{\appendixname}{APPENDIX}
265 \renewcommand{\contentsname}{TABLE OF CONTENTS}
266 \renewcommand{\listfigurename}{LIST OF FIGURES}
267 \renewcommand{\listtablename}{LIST OF TABLES}
268 %% for REFERENCE section
269 \renewcommand{\bibname}{REFERENCES}
```

\@dottedtocline@sec   Redefine \@dottedtocline from the original ltsect.dtx \@dottedtocline{⟨level⟩}{⟨indent⟩}{⟨numwidth⟩}

```
270 \newcommand{\@dottedtocline@sec}[5]{%
271 \ifnum #1>\c@tocdepth \else
272 \begin{SingleSpace}
273 \vskip \z@ \@plus.2\p@
274 {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
275 \parindent #2\relax\@afterindenttrue
276 \interlinepenalty\@M
277 \leavevmode
278 \@tempdima #3\relax
279 \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
280 {#4}\nobreak
281 \leaders\hbox{$\m@th
282 \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
283 mu$}\hfill
284 \nobreak
285 \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor #5}%
286 \par}
287 \end{SingleSpace}%
288 \fi}
```

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

```
289 \renewcommand{\@dotsep}{1}
290 \renewcommand{\l@section}{
291 \@dottedtocline@sec{1}{1.5em}{2.3em}
292 }
293
294 \renewcommand{\cftfigurename}{\figurename\space}
295 \renewcommand{\cfttablename}{\tablename\space}
```

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\l@figure \l@figure{⟨*title*⟩}{⟨*page*⟩} typesets the LoF entry for a \figure caption heading. Multiple line figure captions are single spaced.

```
295 \let\oldl@figure=\l@figure
296 \renewcommand{\l@figure}{\SingleSpacing\oldl@figure}
```

\l@table \l@table{⟨*title*⟩}{⟨*page*⟩} typesets the LoF entry for a \table caption heading. Multiple line table captions are single spaced.

```
297 \let\oldl@table=\l@table
298 \renewcommand{\l@table}{\SingleSpacing\oldl@table}
```

3.2.2 Main Body

\chapter

```
299 \makechapterstyle{mineschapter}{%
300 \setlength{\midchapskip}{.2\baselineskip}
301 \setlength{\afterchapskip}{.2\baselineskip}
302 \renewcommand{\chapnumfont}{\normalfont}
303 \renewcommand{\chaptitlefont}{\normalfont}
304 \renewcommand{\chapterheadstart}{}
305 \renewcommand{\printchapternum}{}
306 \renewcommand{\printchapternonum}{}
307 \renewcommand{\printchaptername}{%
308 \centerline{\chapnumfont\MakeTextUppercase{\@chapapp\ \thechapter}}}
309 \renewcommand{\printchaptertitle}[1]{%
310 \centering \vbox{\chaptitlefont\invpyr{\MakeTextUppercase{##1}}}
311 }
312 }
313 \chapterstyle{mineschapter}
```

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

```
314 \newcommand{\reproduceinfo}[1]{
315 \begin{center}
316 #1\par
317 \end{center}
318 }
```

\reproduceabstract One single line of Abstract flused left.

```
319 \newcommand{\reproduceabstract}{
320 {\noindent Abstract\par}
321 }
```

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

```
322 \AtBeginDocument{
323 \setlength{\footmarkwidth}{\z@}
324 \setlength{\footmarksep}{-\footmarkwidth}
325 \setlength{\footparindent}{\footmarkwidth}
```

```
326 \renewcommand{\footnoterule}{%
327 \kern .5\baselineskip%
328 \hrule width \columnwidth \kern .5\baselineskip}
329 }
```

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

```
330 \newcommand{\symbolfootnote}[2]{
331 \renewcommand{\thefootnote}{\fnsymbol{footnote}}
332 \footnote[#1]{#2}
333 \renewcommand{\thefootnote}{\arabic{footnote}}
334 }
```

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

```
335 \renewcommand{\section}{\@startsection{section}
336 {1} % level
337 {\z@} % indent from left margin
338 {.1ex} % skip above heading
339 {.1ex} % heading between title and text
340 {\normalfont\normalsize\bfseries}}
341 \renewcommand{\subsection}{\@startsection{subsection}
342 {1} % level
343 {\z@} % indent from left margin
344 {.1ex} % skip above heading
345 {.1ex} % heading between title and text
346 {\normalfont\normalsize\bfseries}}
347 \renewcommand{\subsubsection}{\@startsection{subsubsection}
348 {1} % level
349 {\z@} % indent from left margin
350 {.1ex} % skip above heading
351 {.1ex} % heading between title and text
352 {\normalfont\normalsize\bfseries}}
```

longtable

```
353 \AtBeginDocument{
354 \@ifpackageloaded{longtable}{
355 \setlength{\LTcapwidth}{\linewidth}
356
357 }{}
358 }
```

3.2.3 Back Matter

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

```
359 \AtBeginDocument{
360 \@ifpackageloaded{natbib}{
361 \setlength{\bibhang}{\parindent}
362 \renewcommand{\bibpreamble}{\vspace{\parskip}}
363 }{}
364 }
```

13

`\bibliography`

```
365 \let\oldbibliography=\bibliography
366 \renewcommand{\bibliography}[1]{
367 \begin{SingleSpace}
368 \oldbibliography{#1}
369 \end{SingleSpace}
370 }
```

3.2.4 Others

`\firmlist`
`\tightlist`

These two macros can be used at the start of a list environment to reduce the vertical gaps. `\tightlist` removes all interior spaces while `\firmlist` only removes some.

```
371 \AtBeginDocument{
372 \tightlists
373 } %\firmlists
```

Prevent LaTeX from hyphenating the entire document

```
374 \AtBeginDocument{
375 \tolerance=1
376 \emergencystretch=\maxdimen
377 \hyphenpenalty=10000
378 \hbadness=10000
379 }
```

`\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.

```
380 \AtBeginDocument{
381 \let\@afterindentfalse\@afterindenttrue
382 \@afterindenttrue
383 }
384 %
385 %
```

`landscape`

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

```
386 \AtBeginDocument{
387 \@ifpackageloaded{pdflscape}{
388 \newcommand{\Lpagenumber}{\ifdim\textwidth=\linewidth\else\bgroup
389 \dimendef\margin=0 %use \margin instead of \dimen0
390 \ifodd\value{page}\margin=\oddsidemargin
391 \else\margin=\evensidemargin
392 \fi
393 \raisebox{\dimexpr -\topmargin-\headheight-\headsep-0.5\linewidth}[0pt][0pt]{%
394 \rlap{\hspace{\dimexpr \margin+\textheight+\footskip}%
395 \llap{\rotatebox{90}{\thepage}}}}%
396 \egroup\fi
397 }
398 \@ifpackageloaded{everypage}{
399 \AddEverypageHook{\Lpagenumber}%
```

```
400 \let\oldlandscape=\landscape
401 \let\endoldlandscape=\endlandscape
402 \renewenvironment{landscape}{
403 \oldlandscape\pagestyle{empty}\begin{vplace}}{
404 \end{vplace}\endoldlandscape
405 \pagestyle{plain}}
406 }{}
407 }{}
408 }
```