The `ut-thesis` class [*]

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Abstract

The `ut-thesis` document class and template implements the requirements of the University of Toronto School of Graduate Studies (SGS), as of Winter 2020.

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1 Usage

```
\documentclass{ut-thesis}
\documentclass[...options...]{ut-thesis}
```

The default settings produce a final copy, ready for submission to the School of Graduate Studies (SGS) at the University of Toronto: single-sided, "normal" margins (see below), one-and-a-half spaced with single-spaced notes.

1.1 Options

- Any standard option for the LaTeX2e `report` class, including `10pt`, `11pt`, `12pt`, `oneside`, `twoside`, etc.

- `narrowmargins`, `normalmargins`, `widemargins`, or `extrawidemargins`: Set the size of the margins, as follows: . `narrow`: 1 1/4" on the left, 3/4" on all other sides, headers & footers 3/8" from body (these are the minimum values required by SGS); . `normal`: 1 1/4" on the left, 1" on all other sides, headers & footers 1/2" from body; . `wide`: 1 1/4" on all sides, headers & footers 5/8" from body; . `extrawide`: 1 1/2" on all sides, headers & footers 3/4" from body. If you have more than just a few marginal notes, it is recommended that you use at least `wide` margins. For other settings, use the `\geometry` command (see the template for details).

- `singlespaced`, `oneandahalfspaced`, or `doublespaced`: Set the entire document's default line spacing (except for notes, which are single-spaced by default). For other settings, use the `\setstretch` command (see the template for details).

- `singlespacednotes` or `standardspacednotes`: Set line spacing for footnotes and marginal notes: either single-spaced or the same as the rest of the document.

- `cleardoublepagestyleempty`, `cleardoublepagestyleplain`, or `cleardoublepagestylestandard`: Set the page style for all "cleared" pages (empty pages inserted in two-sided documents to put the next page on the right-hand side) to either `empty`, `plain`, or whatever style is in effect when the page is cleared (the default).

- `draft`: Produce a draft copy (double-sided, double-spaced, normal margins, with the word "DRAFT" printed at all four corners of every page).

Note that these options can be used to override the default or draft document settings, so that it is possible, for example, to create a double-sided final copy, or a 1 1/2-spaced draft copy with wide margins, etc. You may use standard LaTeX packages to tailor the layout and formatting in other ways. Also note that when producing double-sided documents while *not* in draft mode, new chapters and preliminary sections will always start on a right-hand page under the default settings (inserting a blank page if needed). This can be overridden by using the `openany` or `openright` options. To achieve this effect for individual sections or chapters, use `\cleardoublepage` – or one of the more specific `\clearemptydoublepage`, `\clearplaindoublepage`, `\clearthesisdoublepage`, or `\clearstandarddoublepage` (see below for details).

1.2 Environments & Commands

* `\degree{...}`: (preamble only; REQUIRED) Specify the name of the degree (e.g., "Doctor of Philosophy").

* `\department{...}`: (preamble only; REQUIRED) Specify the name of the graduate department.

* `\gradyear{...}`: (preamble only; REQUIRED) Specify the year of graduation (defaults to current year).

* `\author{...}`: (preamble only; REQUIRED) Specify the name of the author.

* `\title{...}`: (preamble only; REQUIRED) Specify the title of the thesis.

- `\begin{preliminary}...\end{preliminary}`: Delimit head matter (title page, abstract, table of contents, lists of tables and figures, etc.): set the page style and numbering for the preliminary sections and reset them for the main document.

- `\maketitle`: Generate the title page from the information supplied in the preamble.

- `\begin{abstract}...\end{abstract}`: Generate the abstract page, double-sided. (According to SGS guidelines, this must immediately follow the title page.)

- `\begin{dedication}...\end{dedication}`: Generate a dedication section, if needed (just a paragraph formatted flush right).

- `\begin{acknowledgements}...\end{acknowledgements}`: Generate an acknowledgements section, if needed.

Note that neither the `dedication` nor the `acknowledgements` are put on a separate page by default (use `\newpage` to do this explicitly). Also note that the table of contents, list of tables, and list of figures can be generated using the usual LaTeX commands.

- `\begin{longquote}...\end{longquote}`: Single-spaced version of the `quote` environment.

- `\begin{longquotation}...\end{longquotation}`: Single-spaced version of the `quotation` environment.

- `\clearemptydoublepage`, `\clearplaindoublepage`, `\clearthesisdoublepage`: Same as `\cleardoublepage` except that cleared pages have style `empty`, `plain`, or `thesis` respectively.

- `\clearstandarddoublepage`: Same as the original `\cleardoublepage` (cleared pages use the style currently in effect) – used to override the effects of options `cleardoublepagestyleempty` or `cleardoublepagestyleplain`.

The companion file `ut-thesis.tex` contains a skeleton illustrating the use of this class.

2   Implementation

2.1   Initial Code

Switch for testing draft mode (toggled by `draft` option).

```
1 \newif\if@draft
2 \@draftfalse
```

Switch for testing current page style.

```
3 \newif\if@thesispagestyle
4 \@thesispagestyletrue
```

Save original definitions of footnote and marginal note macros and lengths, to be able to reset them below as needed (when changing between single-spaced and standard-spaced notes).

```
5  \let\@thesis@footnotetext\@footnotetext
6  \let\@thesis@mpfootnotetext\@mpfootnotetext
7  \let\@thesis@marginparreset\@marginparreset
8  \newlength{\@thesisfootnotesep}
9  \newlength{\@thesismarginparpush}
10 \AtBeginDocument
11   {\setlength\@thesisfootnotesep{\footnotesep}
12    \setlength\@thesismarginparpush{\marginparpush}}
```

Save original definition of `\cleardoublepage`.

```
13 \let\clearstandarddoublepage\cleardoublepage
```

The `\singlespacing` macro from `setspace` includes some vertical space (to make it easier to change line spacing within the document). Unfortunately, this has undesirable side-effects within macros, so we define our own replacement here for use within the class.

```
14 \newcommand*{\singlespacingnoskip}{\setstretch{\setspace@singlespace}}
```

2.2   Option Declaration

`draft` option: change default document settings.

```
15 \DeclareOption{draft}{\@drafttrue
16   \newcommand*{\tlDRAFT}%
17     {\raisebox{ 3ex}[0pt][0pt]{\llap{\sffamily\scriptsize DRAFT\ \ }}}
18   \newcommand*{\trDRAFT}%
19     {\raisebox{ 3ex}[0pt][0pt]{\rlap{\sffamily\scriptsize \ \ DRAFT}}}
20   \newcommand*{\blDRAFT}%
```

```
21        {\raisebox{-3ex}[0pt][0pt]{\llap{\sffamily\scriptsize DRAFT\ \ }}}
22      \newcommand*{\brDRAFT}%
23        {\raisebox{-3ex}[0pt][0pt]{\rlap{\sffamily\scriptsize \ \ DRAFT}}}
24      \ExecuteOptions{doublespaced}
25      \PassOptionsToClass{draft,twoside,openany}{report}}
```

Margin options.

```
26 \DeclareOption{narrowmargins}{\AtEndOfClass % 1 1/4" left, 3/4" others
27   {\geometry{margin=.75in,left=1.25in,headsep=.375in-\headheight,
28             footskip=.375in,marginparwidth=.5in,marginparsep=.125in}}}
29 \DeclareOption{normalmargins}{\AtEndOfClass % 1 1/4" left, 1" others
30   {\geometry{margin=1in,left=1.25in,headsep=.5in-\headheight,
31             footskip=.5in,marginparwidth=.75in,marginparsep=.125in}}}
32 \DeclareOption{widemargins}{\AtEndOfClass % 1 1/4" all around
33   {\geometry{margin=1.25in,headsep=.625in-\headheight,
34             footskip=.625in,marginparwidth=.75in,marginparsep=.25in}}}
35 \DeclareOption{extrawidemargins}{\AtEndOfClass % 1 1/2" all around
36   {\geometry{margin=1.5in,headsep=.75in-\headheight,
37             footskip=.75in,marginparwidth=1in,marginparsep=.25in}}}
```

Line Spacing options.

```
38 \DeclareOption{singlespaced}{\AtEndOfClass{\singlespacingnoskip}}
39 \DeclareOption{onehalfspaced}{\AtEndOfClass{\onehalfspacing}}
40 \DeclareOption{doublespaced}{\AtEndOfClass{\doublespacing}}
```

Line spacing for notes.

```
41 \DeclareOption{singlespacednotes}{\AtBeginDocument
42   {\setlength\footnotesep{\@thesisfootnotesep}
43    \setlength\marginparpush{\@thesismarginparpush}
44    \renewcommand{\@footnotetext}[1]%
45      {\@thesis@footnotetext{#1\singlespacingnoskip}}
46    \renewcommand{\@mpfootnotetext}[1]%
47      {\@thesis@mpfootnotetext{#1\singlespacingnoskip}}
48    \renewcommand*{\@marginparreset}%
49      {\@thesis@marginparreset\singlespacingnoskip}}}
50 \DeclareOption{standardspacednotes}{\AtBeginDocument
51   {\setlength\footnotesep{\baselineskip-\@thesisfootnotesep}
52    \setlength\marginparpush{\baselineskip-\@thesismarginparpush}
53    \let\@footnotetext\@thesis@footnotetext
54    \let\@mpfootnotetext\@thesis@mpfootnotetext
55    \let\@marginparreset\@thesis@marginparreset}}
```

Page styles for cleared pages.

```
56 \DeclareOption{cleardoublepagestyleempty}
57   {\AtEndOfClass{\let\cleardoublepage\clearemptydoublepage}}
```

```
58 \DeclareOption{cleardoublepagestyleplain}
59  {\AtEndOfClass{\let\cleardoublepage\clearplaindoublepage}}
60 \DeclareOption{cleardoublepagestylestandard}
61  {\AtEndOfClass{\let\cleardoublepage\clearstandarddoublepage}}
```

All other options are passed to the base class directly.

```
62 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{report}}
```

2.3 Option Execution

Default settings: standard options followed by ut-thesis options.

```
63 \ExecuteOptions{letterpaper,oneside,openright}
64 \ExecuteOptions{normalmargins,onehalfspaced,singlespacednotes}
```

Process options.

```
65 \ProcessOptions
```

2.4 Package Loading

Load base class using current setting for basic options.

```
66 \LoadClass{report}
```

To set/change page layout.

```
67 \RequirePackage{calc}
68 \RequirePackage{geometry}
```

To set/change line spacing.

```
69 \RequirePackage{setspace}
```

2.5 Main Code

2.5.1 Parameters

The following five commands set the respective field values so we can generate the title
page and abstract page automatically.

```
70 \newcommand*{\degree}[1]%
71  {\ifx\empty#1\empty\else\gdef\@degree{#1}\fi}
72 \newcommand*{\department}[1]%
73  {\ifx\empty#1\empty\else\gdef\@department{#1}\fi}
```

```
74 \newcommand*{\gradyear}[1]%
75   {\ifx\empty#1\empty\else\gdef\@gradyear{#1}\fi}
76 \renewcommand*{\author}[1]%
77   {\ifx\empty#1\empty\else\gdef\@author{#1}\fi}
78 \renewcommand*{\title}[1]%
79   {\ifx\empty#1\empty\else\gdef\@title{#1}\fi}
```

Default values for the required fields.

```
80 \degree{\emph{(degree)}}
81 \department{\emph{(department)}}
82 \gradyear{\emph{(year of graduation)}}
83 \author{\emph{(author)}}
84 \title{\emph{(title)}}
```

2.5.2 Environments and Commands

`\begin{preliminary}` sets the pagestyle and page numbering for the preliminary sections; `\end{preliminary}` resets the page numbering. The default page style is used outside of the preliminary block.

```
85 \newenvironment*{preliminary}%
86   {\pagestyle{plain}\pagenumbering{roman}}%
87   {\cleardoublepage\pagenumbering{arabic}}
```

Change `\maketitle` to follow SGS guidelines.

```
88 \renewcommand*{\maketitle}%
89   {\begin{titlepage}
90    \large\singlespacingnoskip
91    \begin{center}
92      \mbox{}
93      \vfill
94      \textsc{\@title}\\
95      \vfill
96      by \\
97      \vfill
98      {\@author}\\
99      \vfill
100     \vfill
101     A thesis submitted in conformity with the requirements\\
102     for the degree of {\@degree}\\
103     Graduate Department of {\@department}\\
104     University of Toronto\\
105     \vfill
106     {\copyright} Copyright {\@gradyear} by {\@author}\\
107     \vspace{.01\textheight}
```

```
108        \mbox{}
109    \end{center}
110    \setcounter{page}{1}
111    \end{titlepage}
112    \setcounter{page}{2}}
```

Change `\begin{abstract}...\end{abstract}` to follow SGS guidelines.

```
113 \renewenvironment*{abstract}%
114   {\begin{center}
115       \section*{Abstract}
116    \end{center}
117    \begin{center}
118       {\@title}\\[2ex]
119       {\@author}\\
120       {\@degree}\\
121       Graduate Department of {\@department}\\
122       University of Toronto\\
123       {\@gradyear}\\
124    \end{center}
125    \begingroup
126    %% Adjust line spacing: if it was less than 2, increase it to 2;
127    %% otherwise, leave it as is.
128    \ifdim \baselinestretch pt < 1.6pt \doublespacing\fi}%
129   {\par\endgroup\newpage}
```

`\begin{dedication}...\end{dedication}` formats a dedication section (*not* on a separate page – just a paragraph formatted flush right).

```
130 \newenvironment*{dedication}%
131   {\begin{flushright}}%
132   {\end{flushright}}
```

`\begin{acknowledgements}...\end{acknowledgements}` formats an acknowledgements section (*not* on a separate page).

```
133 \newenvironment*{acknowledgements}%
134   {\begin{center}
135       \section*{Acknowledgements}
136    \end{center}
137    \begingroup\noindent}%
138   {\par\endgroup}
```

Redefine `\thebibliography` environment so that it generates headers in the same style as the rest of the document.

```
139 \let\@thesisthebibliography\thebibliography
140 \renewcommand*{\thebibliography}[1]{\@thesisthebibliography{#1}
141    \if@thesispagestyle\@mkboth{\textsc{\bibname}}{\textsc{\bibname}}\fi}
```

Variations of `\cleardoublepage` that explicitly set the pagestyle of any inserted blank page.

```
142 \newcommand*{\clearemptydoublepage}%
143   {{\pagestyle{empty}\clearstandarddoublepage}}
144 \newcommand*{\clearplaindoublepage}%
145   {{\pagestyle{plain}\clearstandarddoublepage}}
146 \newcommand*{\clearthesisdoublepage}%
147   {{\pagestyle{thesis}\clearstandarddoublepage}}
```

Single-spaced quotes and quotations.

```
148 \newenvironment*{longquote}%
149   {\begin{quote}\singlespacingnoskip}{\end{quote}}
150 \newenvironment*{longquotation}%
151   {\begin{quotation}\singlespacingnoskip}{\end{quotation}}
```

2.5.3 Page Styles

Redefine all four standard page styles (empty, plain, headings, myheadings), based on the definitions in `report`, so that they conform to the SGS guidelines (and include draft information if applicable). Then, define a new pagestyle `thesis`.

TODO: Get rid of copy-pasted definitions for pagestyles?

Pagestyle `empty`.

```
152 \renewcommand*{\ps@empty}%
153   {\@thesispagestylefalse
154    \let\@mkboth\@gobbletwo
155    \def\@oddfoot{\if@draft\blDRAFT\hfil
156       {\slshape\small\today}\hfil\brDRAFT\fi}%
157    \let\@evenfoot\@oddfoot
158    \def\@oddhead{\if@draft\tlDRAFT\hfil
159       {\slshape\small\today}\hfil\trDRAFT\fi}%
160    \let\@evenhead\@oddhead}
```

Pagestyle `plain`.

```
161 \renewcommand*{\ps@plain}%
162   {\@thesispagestylefalse
163    \let\@mkboth\@gobbletwo
164    \def\@oddfoot{\if@draft\blDRAFT\fi\hfil
165       \thepage\hfil\if@draft\brDRAFT\fi}%
166    \let\@evenfoot\@oddfoot
167    \def\@oddhead{\if@draft\tlDRAFT\hfil
168       {\slshape\small\today}\hfil\trDRAFT\fi}%
169    \let\@evenhead\@oddhead}
```

Pagestyle `headings`.

```
170 \if@twoside % two-sided printing
171 \renewcommand*{\ps@headings}%
172   {\@thesispagestylefalse
173    \let\@mkboth\markboth
174    \def\@oddfoot{\if@draft\blDRAFT\hfil
175       {\slshape\small\today}\hfil\brDRAFT\fi}%
176    \let\@evenfoot\@oddfoot
177    \def\@oddhead{\if@draft\tlDRAFT\fi{\slshape\rightmark}\hfil
178       \thepage\if@draft\trDRAFT\fi}%
179    \def\@evenhead{\if@draft\tlDRAFT\fi\thepage\hfil
180       {\slshape\leftmark}\if@draft\trDRAFT\fi}%
181    \def\chaptermark##1{\markboth
182       {\MakeUppercase{\ifnum \c@secnumdepth >\m@ne
183          \@chapapp\ \thechapter. \ \fi ##1}}{}}%
184    \def\sectionmark##1{\markright
185       {\MakeUppercase{\ifnum \c@secnumdepth >\z@
186          \thesection. \ \fi ##1}}}}
187 \else % one-sided printing
188 \renewcommand*{\ps@headings}%
189   {\@thesispagestylefalse
190    \let\@mkboth\markboth
191    \def\@oddfoot{\if@draft\blDRAFT\hfil
192       {\slshape\small\today}\hfil\brDRAFT\fi}%
193    \def\@oddhead{\if@draft\tlDRAFT\fi{\slshape\rightmark}\hfil
194       \thepage\if@draft\trDRAFT\fi}%
195    \def\chaptermark##1{\markright
196       {\MakeUppercase{\ifnum \c@secnumdepth >\m@ne
197          \@chapapp\ \thechapter. \ \fi ##1}}}}
198 \fi%@twoside
```

Pagestyle `myheadings`.

```
199 \renewcommand*{\ps@myheadings}%
200   {\@thesispagestylefalse
201    \let\@mkboth\@gobbletwo
202    \def\@oddfoot{\if@draft\blDRAFT\hfil
203       {\slshape\small\today}\hfil\brDRAFT\fi}%
204    \let\@evenfoot\@oddfoot
205    \def\@oddhead{\if@draft\tlDRAFT\fi{\slshape\rightmark}\hfil
206       \thepage\if@draft\trDRAFT\fi}%
207    \def\@evenhead{\if@draft\tlDRAFT\fi\thepage\hfil
208       {\slshape\leftmark}\if@draft\trDRAFT\fi}%
209    \let\chaptermark\@gobble\let\sectionmark\@gobble}
```

Pagestyle `thesis` (based on `headings`).

```
210 \if@twoside % two-sided printing
```

```
211 \newcommand*{\ps@thesis}%
212   {\@thesispagestyletrue
213    \let\@mkboth\markboth
214    \def\@oddfoot{\if@draft\blDRAFT\hfil
215       {\slshape\small\today}\hfil\brDRAFT\fi}%
216    \let\@evenfoot\@oddfoot
217    \def\@oddhead{\if@draft\tlDRAFT\fi{\slshape\rightmark}\hfil
218       \thepage\if@draft\trDRAFT\fi}%
219    \def\@evenhead{\if@draft\tlDRAFT\fi\thepage\hfil
220       {\slshape\leftmark}\if@draft\trDRAFT\fi}%
221    \def\chaptermark##1{\markboth
222       {\textsc{\ifnum \c@secnumdepth >\m@ne
223          \@chapapp\ \thechapter. \ \fi ##1}}{}}%
224    \def\sectionmark##1{\markright
225       {\textsc{\ifnum \c@secnumdepth >\z@
226          \thesection. \ \fi ##1}}}}
227 \else % one-sided printing
228 \newcommand*{\ps@thesis}%
229   {\@thesispagestyletrue
230    \let\@mkboth\markboth
231    \def\@oddfoot{\if@draft\blDRAFT\hfil
232       {\slshape\small\today}\hfil\brDRAFT\fi}%
233    \def\@oddhead{\if@draft\tlDRAFT\fi{\slshape\rightmark}\hfil
234       \thepage\if@draft\trDRAFT\fi}%
235    \def\chaptermark##1{\markright
236       {\textsc{\ifnum \c@secnumdepth >\m@ne
237          \@chapapp\ \thechapter. \ \fi ##1}}}}
238 \fi%@twoside
```

Default page style.

```
239 \pagestyle{thesis}
```