



UNIVERSITEIT•STELLENBOSCH•UNIVERSITY  
jou kennisvennoot • your knowledge partner

## The `usthesis` Class and Style\*

Danie Els<sup>†</sup>

e-mail: [dnjels@sun.ac.za](mailto:dnjels@sun.ac.za)

Department of Mechanical and Mechatronics Engineering  
University of Stellenbosch  
Private Bag X1, Matieland 7602 , South Africa.

2011/09/08

### Abstract

The `usthesis` class/style files are provided to typeset reports, theses and dissertations that conform to the requirements of the Engineering Faculty of the University of Stellenbosch, South Africa.

The class file `usthesis.cls` is based on the standard L<sup>A</sup>T<sub>E</sub>X `book` class, while `usthesis.sty` is a style file to be loaded on top of the very powerful `memoir` class. Both options give identical output, but the benefit of the using `memoir` is that it has many additional command and environments for formatting and processing of a document.

`Usthesis` is primarily concerned with the formatting of the front matter such as the title page, abstract, etc. It also works together with the `babel` package to provide language options to typeset documents in Afrikaans or in English.

---

\*This class has version number v4.2, last revised 2011/09/08.

<sup>†</sup>Any help with proofreading this document will be appreciated.

## Contents

<b>1</b>	<b>User Interface</b>	<b>4</b>
1.1	usthesis class and style files . . . . .	4
1.1.1	Loading the <code>usthesis</code> packages . . . . .	4
1.1.2	The <code>usthesis</code> options: . . . . .	4
1.1.3	L <sup>A</sup> T <sub>E</sub> X class options: . . . . .	6
1.1.4	Global package options: . . . . .	6
1.2	Required Packages . . . . .	7
1.2.1	Language setup . . . . .	7
1.2.2	Input font encoding . . . . .	8
1.2.3	Output font encoding . . . . .	8
1.2.4	Font selection . . . . .	9
1.2.5	Mathematics . . . . .	9
1.2.6	Graphics and Color . . . . .	10
1.2.7	Line spacing . . . . .	10
1.2.8	Paragraph indent and spacing . . . . .	10
1.3	Useful packages . . . . .	11
1.3.1	SI units and numbers . . . . .	11
1.3.2	Tables and arrays . . . . .	11
1.3.3	Hyper links . . . . .	12
<b>2</b>	<b>Front matter</b>	<b>13</b>
2.1	Title page . . . . .	13
2.2	Watermark . . . . .	16
2.3	Copyright Information . . . . .	19
2.4	Declaration page . . . . .	19
2.5	Abstract . . . . .	19
2.6	Acknowledgements, Dedications, etc. . . . .	19
<b>3</b>	<b>Back Matter</b>	<b>20</b>
3.1	Bibliography/List of References . . . . .	20
<b>4</b>	<b>Implementation: <code>usthesis</code></b>	<b>21</b>
4.1	Identification . . . . .	21
4.2	External packages . . . . .	21
4.3	Options . . . . .	22
4.3.1	Language options . . . . .	22
4.3.2	Thesis type options . . . . .	24
4.3.3	Page layout options . . . . .	26
4.3.4	Process package options . . . . .	26
4.4	Temporaries . . . . .	26
4.5	Page layout . . . . .	27
4.5.1	A5 type block area . . . . .	27
4.5.2	Golden section type block area . . . . .	28
4.5.3	Wide type block area . . . . .	29
4.6	Utility commands . . . . .	29
4.7	Front pages . . . . .	30
4.7.1	Title page . . . . .	30
4.7.2	Copyright page . . . . .	34

4.7.3	Declaration page . . . . .	35
4.7.4	Abstract page . . . . .	36
4.7.5	Table of contents . . . . .	36
4.7.6	List of figures . . . . .	37
4.7.7	List of tables . . . . .	37
4.8	Back matter . . . . .	38
4.8.1	Bibliography . . . . .	38
4.8.2	Index . . . . .	39
4.9	Page markup . . . . .	39
4.9.1	Headers and footers . . . . .	39
4.9.2	Chapter and section headings . . . . .	42
4.9.3	Floats and float pages . . . . .	43
4.9.4	Captions . . . . .	43

# 1 User Interface

## 1.1 `usthesis` class and style files

Two style files are provided to typeset theses of the University of Stellenbosch. The class file `usthesis.cls` is based on the standard L<sup>A</sup>T<sub>E</sub>X book class, while `usthesis.sty` is a style file to be loaded on top of the very powerful `memoir` class. Both options give identical output, but the benefit of the using `memoir` is that it has many additional command and environments for formatting and processing of a document.

### 1.1.1 Loading the `usthesis` packages

- (a) The `usthesis.cls` class is loaded in the document preamble with

```
\documentclass[12pt,oneside,openany,a4paper, %... Layout
             afrikaans,english,           %... Global lang drivers
             masters-t, goldenblock        %... Thesis options
]{usthesis}
```

- (b) or `usthesis.sty` with the `memoir` class

```
\documentclass[12pt,oneside,openany,a4paper, %... Layout
             afrikaans,english,           %... Global lang drivers
             ]{memoir}
\usepackage[masters-t, goldenblock]{usthesis}%... Thesis options
```

### 1.1.2 The `usthesis` options:

**Document type options:** This options for the `usthesis` class/style are for specific formatting of the title and abstract pages of the different document types.

**report:** Final year project reports, etc.

**masters-a:** An assignment masters degree.

**masters-t:** A thesis masters degree.

**PhD:** A PhD dissertation handed in for examination.

**PhDfinal:** A PhD dissertation handed in for publication after acceptance.

**Type block sizes:** The ISO A4 paper size (297,3 mm × 210,2 mm) is not ideally suited for typesetting off books. The *A5 type block* (fig 1) and the *golden ratio type block* (fig 2) are layouts designed by the great typographer Jan Tschichold which adheres to the classic typographic principals.<sup>1</sup> A 12 pt font size is recommended for most fonts. The following options are provided as part of the `usthesis` class/style options:

**a5block:** ISO A4 paper with A5 type block

**goldenblock:** ISO A4 paper with golden ratio type block,

**wideblock:** Type block with 25 mm borders

**stdblock:** Standard L<sup>A</sup>T<sub>E</sub>X type block [default].

<sup>1</sup>The Tschichold designs have a 3:5 ratio between the inner and outer margins. The `usthesis` package employs a symmetric layout since v3.0.

The user can set up custom page layouts if needed. The setup depends on the class file used. The following example is for a page with 30 mm margins all around.

(a) memoir.cls with usthesis.sty

```
\documentclass[a4paper,<options>]{memoir}
\usepackage[<options>]{usthesis}
\setlrmarginsandblock{30mm}{30mm}{*} % Left/Right margins
\setulmarginsandblock{30mm}{30mm}{*} % Upper/Lower margins
\checkandfixthelayout \setlength{\headwidth}{\textwidth}
```

(b) usthesis.cls

```
\documentclass[a4paper,<options>]{usthesis}
\usepackage[hmargin={30mm,30mm},vmargin={30mm,30mm}]{geometry}
```

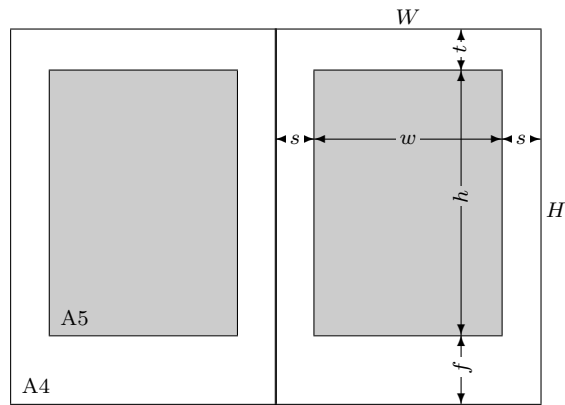


Figure 1: ISO A4 paper with A5 type block (**A5block**)

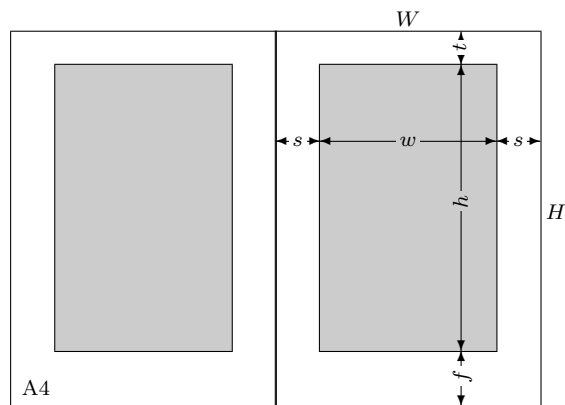


Figure 2: ISO A4 paper with golden ratio type block (**goldenblock**)

Table 1: Page layout parameters

	A5 type block (a5block)		Golden section type block (goldenblock)	
Page width	$W$	$= 210,2 \text{ mm}$	$W$	$= 210,2 \text{ mm}$
Page height	$H = \sqrt{2} W$	$= 297,3 \text{ mm}$	$H = \sqrt{2} W$	$= 297,3 \text{ mm}$
Block width	$w = H/2$	$= 148,7 \text{ mm}$	$w = 2W/3$	$= 140,1 \text{ mm}$
Block height	$h = W$	$= 210,2 \text{ mm}$	$h = H - W/3$	$= 227,2 \text{ mm}$
Side margin	$s = (W - w)/2$	$= 30,8 \text{ mm}$	$s = W/6$	$= 35,0 \text{ mm}$
Top margin	$t = 3(H - h)/8$	$= 32,7 \text{ mm}$	$t = 3W/24$	$= 26,3 \text{ mm}$
Foot margin	$f = 5(H - h)/8$	$= 54,4 \text{ mm}$	$f = 5W/24$	$= 43,8 \text{ mm}$

### 1.1.3 L<sup>A</sup>T<sub>E</sub>X class options:

The gray `boxes` are the L<sup>A</sup>T<sub>E</sub>X default options, while `boxed` options are the preferred options of `usthesis` package.

`10pt`, `11pt`, `12pt`: Sets the size of the main font in the document. The preferred font size depends very much on the font type. For Computer Modern (the default L<sup>A</sup>T<sub>E</sub>X font) is 11 or 12 points the most legible option on an A4 paper size.

`a4paper`, `a5paper`, `b5paper`, `letterpaper`, `executivepaper`, `legalpaper`: Defines the paper size. In South Africa is the ISO A4 paper size the standard.

`fleqn`: Typesets displayed formulae left-aligned instead of centred. This option is a matter of personal taste.

`leqno`: Places the numbering of formulae on the left hand side instead of the right. This is the traditional layout of the American Mathematical Society, but is not used for Engineering theses.

`onecolumn`, `twocolumn`: Instructs L<sup>A</sup>T<sub>E</sub>X to typeset the document in one column or two columns. The University of Stellenbosch Engineering theses are traditionally single column documents.

`twoside`, `oneside`: Specifies whether double or single sided output should be generated. Note that this option concerns the style of the document only. The option `twoside` does not tell the printer you use that it should actually make a two-sided printout. If a printer with double sided printing capability is available, then this option can be used.

`openright`, `openany`: Makes chapters begin either only on right hand pages or on the next page available. Selection of `openright` depends on the selection of the `twoside` option.

### 1.1.4 Global package options:

Global options for packages and drivers can be loaded together with the class options. The most important options are the display drivers for `color`, `graphicx` and `hyperref` as well as the language options for `babel`, `varioref`, etc.

The `display drivers` are normally loaded by the L<sup>A</sup>T<sub>E</sub>X config system defaults.

The global language options for `babel` can be set with:

```
\documentclass[⟨options⟩, afrikaans, english]{usthesis}
\usepackage{babel}
\usepackage{varioref}
```

## 1.2 Required Packages

### 1.2.1 Language setup

L<sup>A</sup>T<sub>E</sub>X provides for a variety of languages. It set up hyphenation patterns and defines language specific output such as chapter names, etc. The default language is American style English, while the South African English is the United Kingdom style. Language options must be loaded with the `babel` package. The last language declared is the default document language.

```
\usepackage[afrikaans, english]{babel} % English default
```

```
\usepackage[english, afrikaans]{babel} % Afrikaans default
```

or preferably with global options

```
\documentclass[⟨options⟩, afrikaans, english]{usthesis}
\usepackage{babel}
```

Languages can be made active with the `\selectlanguage{⟨lang-name⟩}` command from `babel`. In the `usthesis` class, a command

```
\AorE{\Afr-teks}{⟨Eng-text⟩}
```

is provided that types one of the two arguments, depending on whether `afrikaans` is the active language or not. Environments for changing the language options locally are also provided in `usthesis` (if languages are installed with `babel`).

<b>Afr</b>	<code>\begin{Afr}</code>	<code>\begin{Eng}</code>
<b>Eng</b>	<code>Afr-teks ...</code>	<code>Eng-text ...</code>
	<code>\end{Afr}</code>	<code>\end{Eng}</code>

With the `afrikaans` option of `babel` the character " is made active (see table 2. One of the reasons for this is that in the Afrikaans language a word with a dieresis can be hyphenated just before the letter with the umlaut, but the dieresis has to disappear if the word is broken between the previous letter and the accented letter, for example 'geëerd' becomes 'ge-eerd'. It is extremely important that the commands "a, "e, ..., are used in Afrikaans documents, and not \ "e, etc., and neither the direct input of ë with Alt+137 (if `latin1` input encoding is selected).

The `afrikaans` option sometimes has problems with the hyphenation of the very long words. The simplest way to correct a wrongly hyphenated word is to include the discretionary hyphen command `\-` in the word: e.g.: `kom\ -buis\ -kas`. Words that are incorrectly hyphenated and appear frequently within the document can be put into a list of exceptions in the preamble of the document:

```
\hyphenation{Kom-buis-kas ...}
```

Table 2: Definitions from babel loaded with the `afrikaans` option.

"e	The character ë, which hyphenates as -e. Implemented for the letters ä, ë, ï, ö and ü.
"	Disable ligatures (ff, fi, ffi, ffi, etc.) at this position but allow a hyphen, e.g.: The word 'stoffer' looks better as 'stofffilter'. It is then hyphenated as 'stoff-filter'.
"-	An explicit hyphen sign, allowing hyphenation in the rest of the word.
"~	To produce a hyphen character without the following discretionary break after it, e.g.: 'x-sraal'.
" "	To produce an invisible breakpoint.
"“	Lowered double left quotes, e.g.: „lowered” versus “normal”.
"’	Normal double right quotes.
"/	Enable hyphenation in two words, written together but separated by a slash, for example 'uitdrukking/opmerking'.
\-	A redefinition of the standard discretionary hyphen, \-. The new version indicates an extra hyphenation position, while allowing other hyphenation positions to be generated automatically.

It is also important to note that words that contain "e, etc. must be hyphenated by hand when they are near linebreaks, for example: `koëffisiëntematriks`

```
ko"ef\-fisi"en\-te\-mat\-riks
```

### 1.2.2 Input font encoding

In Afrikaans there are many words containing characters such as é, ô, à, ï, etc. These characters can be included directly in the input text file, except ä, ë, ï, ö and ü, which need to be inserted as "a, ..., for proper hyphenation (see previous section). As an example by typing `Alt+136`, you obtain ê. If the Western European input encoding (latin1) is loaded, L<sup>A</sup>T<sub>E</sub>X will recognize these characters.

```
\usepackage[latin1]{inputenc}
```

### 1.2.3 Output font encoding

The classic T<sub>E</sub>X Computer Modern fonts contain only 126 characters (7-bit) per font set (OT1 encoding). It does not contain glyphs for characters such as ê. These characters are formed by two characters that are overprinted (`^+e`). The result is that Afrikaans words such as “*koëffisiëntematriks*,” are not hyphenated automatically. The solution is to use the T1 encoding scheme with 256 character (8-bit) font sets. Postscript Type 1 and TrueType fonts can be configured, with the aid of T<sub>E</sub>X’s virtual font mechanism, to be available for L<sup>A</sup>T<sub>E</sub>X. Font handling can be switched to T1 encoding (if you have the Postscript fonts).

```
\usepackage[T1]{fontenc}
```



### 1.2.4 Font selection

To obtain a PDF e-document of your thesis you need to use Postscript fonts (and T1 encoding for Afrikaans). There are many free Postscript text fonts available in the T<sub>E</sub>X distributions, but Postscript fonts with a full set of mathematical symbols are very scarce. The freely available ones are:

*Computer Modern*: Newer L<sup>A</sup>T<sub>E</sub>X installations contain this classic T<sub>E</sub>X font in Type 1 format. This fontset is loaded by default if T1 encoding is specified without any other font loaded. Alternatively use the `lmodern` package. This document is set in Computer Modern.

*Palatino*: This beautiful font can be loaded with the `mathpazo` package. Palatino is one of the standard Postscript fonts on every Postscript printer. Make sure that the `fpl` fonts are loaded. They provide true small caps and old style figures for the Palatino fonts.

*Times Roman*: This font is loaded with the `mathptmx` package. It contains no bold math characters or true small caps. Please do not use this font for theses, because it was designed for narrow newspaper columns, resulting in very narrow characters. It is just not appropriate for single column theses.

*Utopia*: This font is loaded with the `fourier` package. It contains no true small caps. This font is very good on low resolution output devices.

*CMbright*: This is a sans serif font and is part of the CM-super font set. It can be loaded with the `cmbright` package. You need the `hfbright` fonts installed for the math symbols. A document with a sans serif font, such as CMbright, must be set ragged right. Use the `\RaggedRight` command of the `ragged2e` package.

*Euler*: This is a math font only and can be used with fonts such as Charter that do not have math characters. It is loaded with the `eulervm` package.

An example of a typical setup for an Afrikaans report with mathematics is:

```
\documentclass[report,                %.. Document type
               12pt,oneside,openany,a4paper,a5block,%.. Layout
               english,afrikaans,      %.. Global lang drivers
               ]{usthesis}

\usepackage{babel}                    %.. Language setup
\usepackage[latin1]{inputenc}         %.. Recognizes ê, ë, etc
\usepackage{amsmath}                  %.. Advanced maths (before fonts)
\usepackage[T1]{fontenc}              %.. Type 1 fonts for proper hyphenation
\usepackage{textcomp}                 %.. Additional text characters
\usepackage{fourier}                  %.. Utopia (if you want a different font)
\usepackage{bm}                       %.. Bold math characters (after fonts)
```

### 1.2.5 Mathematics

Normal L<sup>A</sup>T<sub>E</sub>X contains many math typesetting commands and environments, but for serious mathematical typesetting you need to load the American Mathematical Society (AMS) math packages. The AMS packages also include additional math symbols, but load them only if really necessary, because they are very big.

```
\usepackage[options]{amsmath}
\usepackage{amssymb}% only if necessary
```

Bold math symbols can be obtained with the AMS command `\boldsymbol` or with the more advanced `\bm` command from the `bm` package.

### 1.2.6 Graphics and Color

The `graphicx` package is needed by the `usthesis` package to format the title page and must be loaded in the document preamble. The `color` package is optional, but very useful.

```
\usepackage[options]{graphicx}
\usepackage[options]{color}
```

If you need display drivers (such as `dvips`, `pdftex`, etc.) different from the default options, is it important that they are passed on to all the packages as a global option. With the MiKTeX this is achieved with the standard configuration file.

### 1.2.7 Line spacing

The guidelines for University of Stellenbosch theses dictates that either single, one-half or double line spacing be used. Line spacing can be obtained with the `setspace` packages (build into the `memoir` package). With this package, footnotes and captions are still single spaced, while no additional vertical spacing is added around display math or in lists.

- (a) One and a half lines spacing for `memoir.cls` with `usthesis.sty`

```
\documentclass[options]{memoir}
\usepackage[options]{usthesis}
\OnehalfSpacing % or \DoubleSpacing .... Line spacing
:
\begin{document}
  \frontmatter
  \begin{SingleSpace}
    \TitlePage%..... Single spaced title page
  \end{SingleSpace}
  :
```

- (b) One and a half lines spacing for `usthesis.cls`

```
\documentclass[options]{usthesis}
\usepackage[onehalfspacing]{setspace}%.. Line spacing
:
\begin{document}
  \frontmatter
  \begin{singlespace}
    \TitlePage%..... Single spaced title page
  \end{singlespace}
  :
```

### 1.2.8 Paragraph indent and spacing

The conventional way of typesetting running text has no separation between paragraphs, and the first line of each paragraph in a block of text indented.

It is sometimes required that paragraphs are separated with a blank line and without any first line indent. This can be obtained with the `parskip` package (build into the `memoir` package).

(a) Paragraph spacing for `memoir.cls` with `usthesis.sty`

```
\documentclass[<options>]{memoir}
\usepackage[<options>]{usthesis}
\nonzeroparskip%..... Space between paragraphs
\setlength{\parindent}{0pt}%.. Zero paragraph indents
```

(b) Paragraph spacing for `usthesis.cls`

```
\documentclass[<options>]{usthesis}
\usepackage{parskip}%..... Paragraph spacing + zero indent
```

Please note that this is not recommended for theses containing large amounts of mathematics, because it is difficult, if not impossible, to see where a new paragraph starts between equations.

## 1.3 Useful packages

The following are a number of packages that are very useful when writing a thesis.

### 1.3.1 SI units and numbers

`siunitx`: This package is essential for the typesetting of SI units and numbers.

`Sistyle`: Older package for the typesetting of SI units and numbers. It has an option for South African requirements. Read the documentation for the proper typesetting of units and numbers.

`numprint`: This packages typeset numbers and decimal columns in tables.

### 1.3.2 Tables and arrays

`array`: An extended implementation of the `array` and `tabular` environments which implements options to format columns.

`longtable`: Gives non-floating multi-page tables. It includes continuation headers.

`dcolumn`: The package provides a system for defining columns of entries in an array or a table which are to be aligned on a “decimal point”.

`xcolumn`: It modifies the width of certain columns to obtain a table with required width.

`booktabs`: The package provides some additional commands to enhance the quality of tables in  $\text{\LaTeX}$ . Guidelines are given as to what constitutes a good table. The documentation gives a very good discussion on the design of publication quality tables.

### 1.3.3 Hyper links

**hyperref:** It extends the functionality of all the L<sup>A</sup>T<sub>E</sub>X cross-referencing commands (including the table of contents, bibliographies etc.) to produce hyper-text links; it also provides new commands to allow the user to write ad hoc hypertext links, including those to external documents and URLs. A typical setup for hyper links (at the end of the preamble) is:

```
\iftrue
  \usepackage[\langle options \rangle]{hyperref}%... Hyperlinks & backreferences
  %\usepackage{memhfixc} %..... Memoir fix (hyperref>6.75g autoloads it)
\else
  \usepackage{nohyperref}%..... Disable hyperlinks
  \usepackage{url}
\fi
\hypersetup{\langle options \rangle}
```

**url** A form of `\verb` that allows line breaks at certain characters or combinations of characters, accepts reconfiguration, and can usually be used in the argument to another command. It is intended for email addresses, hypertext links, directories/paths, etc., which normally have no spaces. It is implemented by `hyperref`.

## 2 Front matter

### 2.1 Title page

The title page is inserted on the first page of a document with the command

`\TitlePage`

`\TitlePage`

Depending on the selected options, the following commands are used to set the contents of the title page:

#### *Faculty*

`\faculty`

`\faculty{<faculty name>}`

The faculty must be included in Afrikaans and English for Masters and PhD documents.

```
\faculty{\AorE{Fakulteit Ingenieurswese}%
          {Faculty of Engineering}}
```

#### *Address*

`\address`

`\address{<full address>}`

The address must be included in Afrikaans and English for Masters and PhD documents.

```
\address{\AorE{
  Departement Siviele Ingenieurswese,\
  Universiteit van Stellenbosch,\
  Privaatsak X1, 7602 Matieland, Suid Afrika.
}{
  Department of Civil Engineering,\
  University of Stellenbosch,\
  Private Bag X1, 7602 Matieland, South Africa.
}}
```

#### *Author*

`\author{<short name>}{<full names>}`

Provides the author name not only for the title page, but for various other places in the document.

```
\author{J.\ Smith}{John Smith}
```

#### *Date*

`\date{<month>}{<year>}`

The date when the document is handed in. The arguments must be numerical, e.g.:

```
\date{10}{2003}
```

→

October 2003

*Degree/Subject*

`\degree` `\subject` `\degree{<abbr>}{<full name>}` or `\subject{<abbr>}{<full name>}`

The degree or subject names. Please refer to the yearbook for the *correct* names. The degree names must be available in Afrikaans and English.

```
\degree{\AorE{MScIng (Meg)}
        {MScEng (Mech)}}
        {\AorE{Magister in die Natuurwetenskappe in Meganiese Ingenieurswese}
        {Master of Science in Mechanical Engineering}}
```

or

```
\subject{MP 487}{Meganiese Projek 487}
```

*Description*

`\ReportDescript` `\ThesisDescript` `\ReportDescript{<text>}`  
`\ThesisDescript{<text>}`

Set the description for reports.

```
\ReportDescript{Finale Verslag}
```

There is a similar command for theses and dissertations, `\ThesisDescript`, but its contents is predefined. For a master thesis it can be customized as

```
\ThesisDescript{Thesis presented in partial fulfilment of the
requirements for the degree of\par
\vspace{1em}
{\bfseries Master of Science in Mechanical Engineering\par}
\vspace{1em}
at the University of Stellenbosch}
```

If needed the thesis type can be changed with the (predefined) command `\ThesisType`.

*Supervisor/Studyleader/Promotor*

`\studyleader` `\supervisor` `\promotor` `\supervisor[<align>]{<name>}` or `\supervisor{<name> \and <name>}`  
`\studyleader[<align>]{<name>}` or `\studyleader{<name> \and <name>}`  
`\promotor[<align>]{<name>}` or `\promotor{<name> \and <name>}`

The `\studyleader`, `\supervisor` and `\promoter` commands are synonyms and the output depends on the thesis type. The commands also have a starred (\*) form that stack the names of multiple supervisors. The `\and` has an optional argument, e.g.: `\and[1ex]`, for spacing in a stacked environment.

```
\supervisor{Dr.\ D.N.J.\ Els} → Supervisor: Dr. D.N.J. Els
```

or

```
\supervisor{Dr.\ D.\ Els
\and
Mnr.\ J.\ Smith} → Supervisors:
Dr. D. Els Mnr. J. Smith
```

or

```
\supervisor*{Dr.\ D.\ Els
              \and[0ex]
              Mnr.\ J.\ Smith}
```

→

Supervisors:  
Dr. D. Els  
Mnr. J. Smith

or for PhD and PhDfinal options

```
\promotor{%
  Prof A.H.\ Basson\[\.5ex]
  Mechanical Engineering\
  University of Stellenbosch\
\and
  Prof P.A.\ Vermeer\[\.5ex]
  Institut f\"ur Geotechnic\
  Universit\"at Stuttgart}
```

→

Promotors:  
Prof A.H. Basson  
Mechanical Engineering  
University of Stellenbosch  
  
Prof P.A. Vermeer  
Institut für Geotechnic  
Universität Stuttgart

or

```
\promotor[c]{%
  Prof A.H.\ Basson\[\.5ex]
  Mechanical Engineering\
  University of Stellenbosch\
\and
  Prof P.A.\ Vermeer\[\.5ex]
  Institut f\"ur Geotechnic\
  Universit\"at Stuttgart}
```

→

Promotors:  
Prof A.H. Basson  
Mechanical Engineering  
University of Stellenbosch  
  
Prof P.A. Vermeer  
Institut für Geotechnic  
Universität Stuttgart

Note that some supervisors may prefer the term “study leader”. This can be incorporated by adding the following to the preamble of your document:

```
\renewcommand\StudyLeaderAFR{Studieleier:}
\renewcommand\StudyLeadersAFR{Studieleiers:}
\renewcommand\StudyLeaderENG{Study leader:}
\renewcommand\StudyLeadersENG{Study leaders:}
```

## Title

The title of the document is inserted on the front page as well as on the abstract pages of Masters or PhD theses.

```
\title{<title text>}
```

For a normal report, a simple title is sufficient, e.g.:

```
\title{Forced granular flow}
```

For a Masters or PhD thesis, the title must make provisions for both languages.

For an English document:

```
\title{\AorE{ Geforseerde Partikelvloei\[\1ex]
            \normalfont\small\itshape(‘‘Forced Granular flow’’)}
        {Forced granular flow}}
```

and for an Afrikaans document

```
\title{\AorE{Geforseerde Partikelvloei}
        {Forced granular flow\\[1ex]
        \normalfont\small\itshape('Geforseerde Partikelvloei')}}}
```

The user can create his or her own title page (see figure 7), for example:

```
\thispagestyle{empty}
\vfll
{\LARGE\noindent   Seakeeping control of HYSUCATs \par}
\vspace{2em}
{\LARGE\noindent   by \par}
\vspace{2em}
{\LARGE\noindent   Giovanni Sergio Milandri \par}%
\vfll\noindent
\begin{minipage}{.9\textwidth}
\large\slshape\raggedright
Thesis presented in partial fulfilment of the requirements
for the degree of Master of Science in Mechanical Engineering
in the Faculty of Engineering at Stellenbosch University
\end{minipage}
\vfll
{\normalfont\noindent
Department of Mechanical Engineering\\ University of Stellenbosch\\
Private Bag X1, 7602 Matieland, South Africa \par}
\vfll
{\normalsize\noindent Supervisors:\\[1.5ex]
\begin{tabular}{@{}l@{}}
Prof J.L.\ van Niekerk          & Dr G.\ Migeotte \\[.5ex]
Dept of Mechanical Engineering & Unistel Technologies (Pty) Ltd\\
University of Stellenbosch      & University of Stellenbosch
\end{tabular}\par}
\vspace{2em}
{\LARGE\noindent April 2006\par}%
\clearpage
```

## 2.2 Watermark

A watermark can be added to the first page of the document with the aid of the `eso-pic` package.

```
\documentclass[options]{usthesis}
:
\usepackage{eso-pic}
\newcommand*{\WaterMark}[2][0.2\paperwidth]{%
\AddToShipoutPicture*{\AtTextCenter{%
\parbox[c]{0pt}{\makebox[0pt][c]{%
\includegraphics[width=#1]{#2}}}}}
:
\begin{document}
\frontmatter
\WaterMark{UScrest-WM}
\TitlePage
:
\end{document}
```



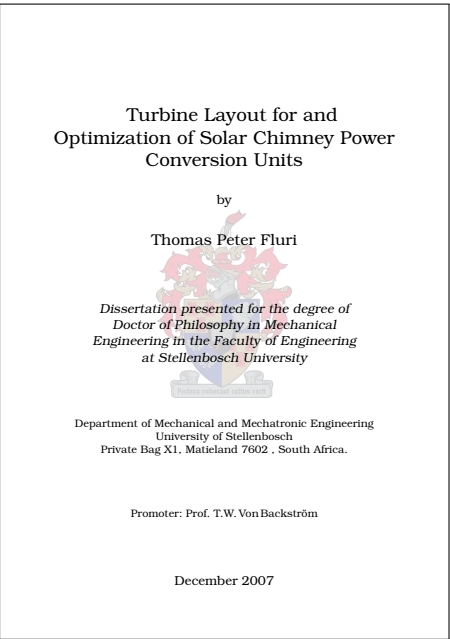


Figure 3: Title page with PhD option for examination

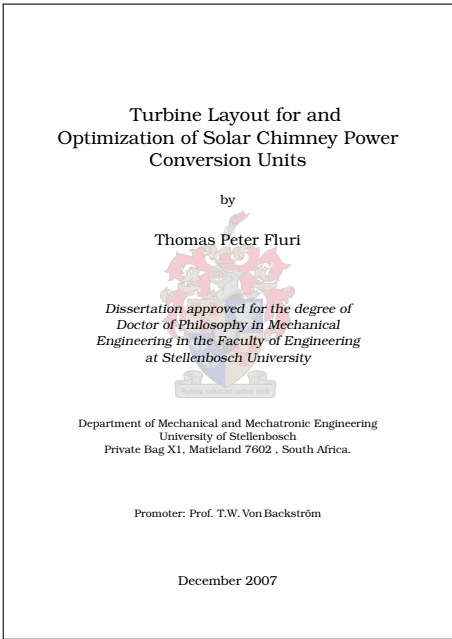


Figure 4: Title page with PhDfinal option for final hand in after examination

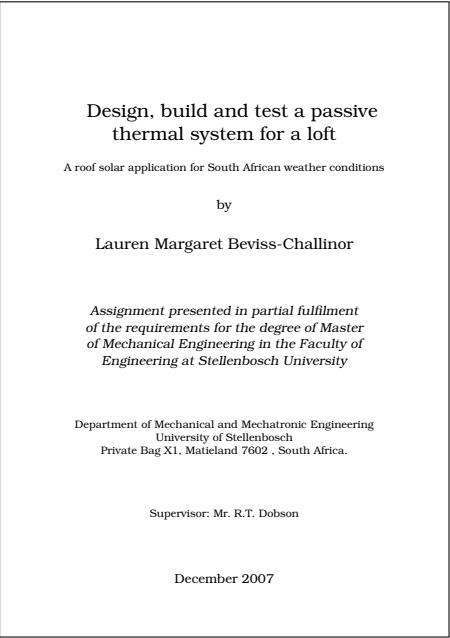


Figure 5: Title page with masters-a option for a masters assignment project

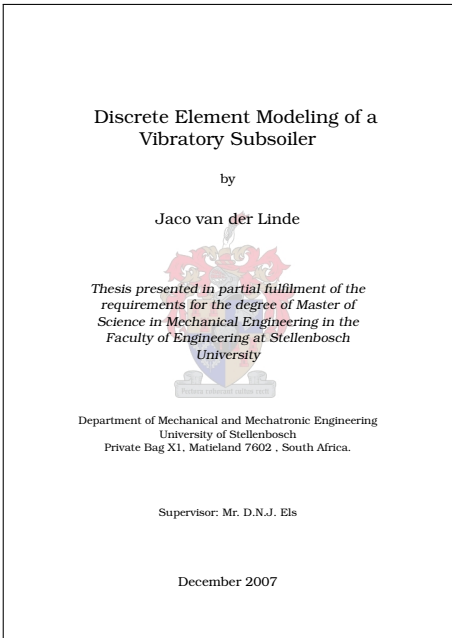


Figure 6: Title page with master-t option for a masters thesis

**Seakeeping control of HYSUCATs**

by

**Giovanni Sergio Milandri**

*Thesis presented in partial fulfilment of  
the requirements for the degree of Master  
of Science in Mechanical Engineering in  
the Faculty of Engineering at Stellenbosch  
University*


Department of Mechanical Engineering  
University of Stellenbosch  
Private Bag X1, 7602 Matieland, South Africa

Supervisors:

Prof J.L. van Niekerk	Dr G. Migeotte
Dept of Mechanical Engineering	Unistel Technologies (Pty) Ltd
University of Stellenbosch	University of Stellenbosch

April 2006

Figure 7: Custom title page for masters thesis

  
UNIVERSITEIT-STELLENBOSCH-UNIVERSITY  
jou kennisennoot • your knowledge partner

**Spur and Helical Gears**

by

**D.N.J. Els**  
(dnjels@sun.ac.za)


Machine Design B344

*Lecturing Notes*

Department of Mechanical and Mechatronic Engineering  
University of Stellenbosch  
Private Bag X1, Matieland 7602, South Africa.

July 2008

Figure 8: Title page with **report** option for lecturing notes

  
UNIVERSITEIT-STELLENBOSCH-UNIVERSITY  
jou kennisennoot • your knowledge partner

**The Design and Test of a Spring  
Damper System for  
the 2006 Mini-Baja Vehicle**

by

**Gabriël Johannes Victor**  
**14273861**

Mechanical Project 478

*Final Report*

Department of Mechanical and Mechatronic Engineering  
University of Stellenbosch  
Private Bag X1, Matieland 7602, South Africa.

Supervisor: Mr D.N.J. Els

October 2007

Figure 9: Title page with **report** option for final year mechanical project

## 2.3 Copyright Information

The copyright information in a thesis or dissertation is compulsory from 2007. It is added to the bottom of the declaration page. The default copyright holder is the University of Stellenbosch.

The default copyright holder can be changed with:

```
\SetCopyrightHolder \SetCopyrightHolder{<new copyright holder>}
```

The copyright output can be switched of with

```
\SetCopyrightOff \SetCopyrightOff
```

Note that the `\CopyrightPage` command is not used any more. It is still included for backward comparability purposes, does nothing.

## 2.4 Declaration page

Every thesis and dissertation *must* include a declaration page.

```
\DeclarationSign \DeclarationSign{<signature>}
\DeclarationDate \DeclarationDate{<signed date>}
\DeclarationPage \DeclarationPage
```

The `\DeclarationPage` command set the required text in the default language and output the copyright statement.

A signature and the signed date can be added with

```
\DeclarationSign{\includegraphics[width=2cm]{<signature file>}}% Optional
\DeclarationDate{<date>}
\DeclarationPage
```

## 2.5 Abstract

An `abstract` environment is provided that prints a page containing all the thesis information. The layout of an abstract for a report differs from that of a thesis or a dissertation. It is also important to note that theses and dissertations require an English and an Afrikaans abstract.

```
abstract \begin{abstract} \begin{abstract}[<language>]
          Text in default language ...      Text in <language> ...
        \end{abstract} \end{abstract}
```

If the traditional abstract page is preferred, then use a normal chapter

```
\chapter{Abstract}
This thesis ...
```

## 2.6 Acknowledgements, Dedications, etc.

Acknowledgements, etc. can be included in the front matter of a document after a `\chapter` command, e.g.:

```
\chapter{Acknowledgements}
I would like to express my sincere gratitude ...
```

## 3 Back Matter

### 3.1 Bibliography/List of References

The USBib package formats bibliographies for theses and dissertations of the University of Stellenbosch. It is language sensitive and provides the correct output for both Afrikaans and English theses.

**Bibliography:** The list of all the citations in numerical order of citation, e.g.:

1. Rhodes, M. *Introduction to Particle Technology*. Wiley, New York (1998).
2. Cleary, P.W. The filling of dragline buckets. *Mathematical Engineering in Industry*, vol. 7, no. 1 (1998), pp. 1–24.

**List of References:** For author-year citations, all the citations sorted in alphabetic order, e.g.:

Cleary, P.W. (1998). The filling of dragline buckets. *Mathematical Engineering in Industry*, vol. 7, no. 1, pp. 1–24.

Rhodes, M. (1998). *Introduction to Particle Technology*. Wiley, New York.

The default name in the USthesis package is “Bibliography”. To change this to “List of References” (for a thesis), we have to overrule the `babel` setup. Make the following declarations

```
\documentclass[12pt,oneside,openany,a4paper,%... Layout
               afrikaans,english,%..... Global language drivers
               ]{memoir}
\usepackage[masters-t,a5block]{usthesis}%..... Document type
\usepackage{babel}%..... Language setup
:
\usepackage{usbib}%..... Bibliography
\bibliographystyle{usmeg-a}%..... Author-year style
\addto\captionsafrikaans{\renewcommand{\bibname}{Lys van Verwysings}}
\addto\captionsenglish{\renewcommand{\bibname}{List of References}}
```

References to the pages or sections of citations, can be included with the `backref` package. The `backref` package loaded as part of `hyperref` or on its own.:

```
\iftrue
\usepackage[backref=page]{hyperref}%... Hyperlinks & backreferences
\else
\usepackage[pageref]{backref}%..... Citation backreferences
\fi
\renewcommand*{\backrefalt}[4]{%
\ifcase #1 (Not cited.)%
\or      (Cited on page~#2.)%
\else    (Cited on pages~#2.)%
\fi}
```

An example is:

Rhodes, M. (1998). *Introduction to Particle Technology*.  
Wiley, New York. (Cited on pages 13 and 15.)

## 4 Implementation: usthesis

The following modules are used in the implementation to direct docstrip in generating the external files:

```
cls    produce the document class usthesis.cls based on book.
mem    produce the document style usthesis.sty for use with memoir.
```

### 4.1 Identification

```
1 < *cls | mem >
2 \NeedsTeXFormat{LaTeX2e}[1999/12/01]
3 < *cls >
4 \def\US@basetype{book}
5 \ProvidesClass{usthesis}[\USfiledate\space
6                               \USfileversion\space
7                               Stellenbosh Thesis class (DNJ ELS)]
8 < /cls >
9 < *mem >
10 \ProvidesPackage{usthesis}[\USfiledate\space
11                               \USfileversion\space
12                               Stellenbosh Thesis class for use with Memoir (DNJ ELS)]
13 \@ifclassloaded{memoir}%
14   {\PackageInfo{usthesis}{Stellenbosch thesis style for MEMOIR class}}%
15   {\PackageError{usthesis}{You must use the Memoir class}{}}
16 < /mem >
```

### 4.2 External packages

We need the calc and ifpdf packages. Ifpdf is all ready declared by memoir.

```
17 \RequirePackage{calc}
18 < *cls >
19 \RequirePackage{ifpdf}
20 < /cls >
```

\phantomsection A command needed, if the hyperref package is used, for putting before certain \addcontentsline commands.

```
21 \providecommand{\phantomsection}{}%
```

We need the graphicx package and it must be loaded by the user in the document preamble.

```
22 \AtBeginDocument{%
23   \@ifpackageloaded{graphicx}{}{}%
24 < cls >   \ClassError{usthesis}{You must load the graphicx package}{}%
25 < mem >   \PackageError{usthesis}{You must load the graphicx package}{}%
26   }%
27 }
```

### 4.3 Options

#### 4.3.1 Language options

##### *Utility commands:*

Utility commands and environments to make local language changes.

```

\US@AFRstr String in the right catcode for tests against \language.
28 \edef\US@AFRstr{\string afrikaans}

\AorE Command \AorE{<Afr>}{<Eng>} to type text depending on the active language.
29 \newcommand{\AorE}[2]{%
30   \ifx\US@AFRstr\language #1\else #2\fi}

Afr Makes an Afrikaans environment inside an English document.
31 \newenvironment{Afr}%
32   {\ifx\language\US@AFRstr\relax\else
33     \selectlanguage{afrikaans}%
34   \fi}%
35   {}

\US@ENGstr Make provisions for all the different types of English. The command is reset within
the options.
36 \newcommand*\US@ENGstr{}
37 \let\US@ENGstr=\relax

Eng Makes an English environment inside an Afrikaans document.
38 \newenvironment{Eng}%
39   {\ifx\relax\US@ENGstr\relax\else
40     \ifx\language\US@ENGstr\relax\else
41       \edef\US@tempa{\noexpand\selectlanguage{\US@ENGstr}}%
42       \US@tempa
43     \fi
44   \fi}%
45   {}

```

##### *Marker commands:*

Commands of which the contents are defined later.

```

46 \newcommand\DegreeName{%
47   <cls> \ClassWarning{usthesis}{No degree or subject supplied}%
48   <mem> \PackageWarning{usthesis}{No degree or subject supplied}%
49   \textfb{[No degree!]}

50 \newcommand\DegreeNameLong{%
51   <cls> \ClassWarning{usthesis}{No degree or subject supplied}%
52   <mem> \PackageWarning{usthesis}{No degree or subject supplied}%
53   \textfb{[No degree!]}

```

*Language commands:*

Declare all the language specific text in separate macros, enabling language changes with the `babel` package commands.

Predefine the language commands to prevent accidental overwrite when loaded from external files.

```

54 \newcommand*\USName{}
55 \newcommand*\AuthByTxt{}
56 \newcommand*\StudyLeaderType{}
57 \newcommand*\StudyLeadersType{}
58 \newcommand*\PromotorType{}
59 \newcommand*\PromotersType{}
60 \newcommand*\TypeReport{}
61 \newcommand*\TypeAssignment{}
62 \newcommand*\TypeThesis{}
63 \newcommand*\TypePhD{}
64 \newcommand*\CopyrightHolder{}
65 \newcommand*\CopyrightTxt{}
66 \newcommand*\CopyrightAnot{}
67 \newcommand*\Signat{}
68 \newcommand*\Datetxt{}
69 \newcommand*\MasterDescript{}
70 \newcommand*\PhDDescript{}
71 \newcommand*\PhDFinalDescript{}
72 \newcommand*\ThesisDeclare{}
73 \newcommand*\MonthName{}
74 \newcommand*\DeclarationName{}
75 \newcommand*\AbstractName{}

```

Input all the language setting from external files

```

76 \InputIfFileExists{usthesis.afr}
77 <mem>    {\PackageInfo{usthesis}{Input file 'usthesis.afr' loaded}}
78 <mem>    {\PackageError{usthesis}{No file 'usthesis.afr'}{}}
79 <cls>    {\ClassInfo{usthesis}{Input file 'usthesis.afr' loaded}}
80 <cls>    {\ClassError{usthesis}{No file 'usthesis.afr'}{}}

81 \InputIfFileExists{usthesis.eng}
82 <mem>    {\PackageInfo{usthesis}{Input file 'usthesis.eng' loaded}}
83 <mem>    {\PackageError{usthesis}{No file 'usthesis.eng'}{}}
84 <cls>    {\ClassInfo{usthesis}{Input file 'usthesis.eng' loaded}}
85 <cls>    {\ClassError{usthesis}{No file 'usthesis.eng'}{}}

```

Set English as default if no language option is selected.

```

86 \USextrasenglish
87 \UScaptionsenglish

```

*Set language options*

`\US@addto` A redefinition of the `babel \addto` command (taken from `varioref`).

```

88 \def\US@addto#1#2{%
89   #2%
90   \@temptokena{#2}%
91   \ifx#1\relax
92     \let#1\@empty

```

```

93 \fi
94 \ifx#1\undefined
95     \edef#1{\the\@temptokena}%
96 \else
97     \toks@\expandafter{#1}%
98     \edef#1{\the\toks@\the\@temptokena}%
99 \fi
100 \@temptokena{}\toks@\@temptokena}

```

`\US@addlangextras` Add the language definitions to `\extras<lang>` and `\captions<lang>` at the beginning of the document after babel.

```

101 \newcommand\US@addlangextras[2]{%
102     \AtBeginDocument{%
103         \expandafter\US@addto\csname extras#1\endcsname #2}}
104 \newcommand\US@addlangcaptions[2]{%
105     \AtBeginDocument{%
106         \expandafter\US@addto\csname captions#1\endcsname #2}}

```

Set all the different English language options.

```

107 \DeclareOption{english}{%
108     \edef\US@ENGstr{\string english}%
109     \US@addlangextras{english}{\USextrasenglish}%
110     \US@addlangcaptions{english}{\UScaptionsenglish}}
111 \DeclareOption{UKenglish}{%
112     \edef\US@ENGstr{\string UKenglish}%
113     \US@addlangextras{UKenglish}{\USextrasenglish}%
114     \US@addlangcaptions{UKenglish}{\UScaptionsenglish}}
115 \DeclareOption{USenglish}{%
116     \edef\US@ENGstr{\string USenglish}%
117     \US@addlangextras{USenglish}{\USextrasenglish}%
118     \US@addlangcaptions{USenglish}{\UScaptionsenglish}}
119 \DeclareOption{british}{%
120     \edef\US@ENGstr{\string british}%
121     \US@addlangextras{british}{\USextrasenglish}%
122     \US@addlangcaptions{british}{\UScaptionsenglish}}

```

Set Afrikaans language option.

```

123 \DeclareOption{afrikaans}{%
124     \US@addlangextras{afrikaans}{\USextrasafrikaans}%
125     \US@addlangcaptions{afrikaans}{\UScaptionsafrikaans}}

```

#### 4.3.2 Thesis type options

`\if@Report` Flag for report option.

```

126 \newif\if@Report
127 \@Reporttrue

```

`\if@Masters` Flag for master-a and master-t options.

```

128 \newif\if@Masters
129 \@Mastersfalse

```

`\if@PhD` Flag for PhD and PhDfinal options.

```

130 \newif\if@PhD
131 \@PhDfalse

```



```

\if@Final   Flag for PhDfinal option.
132 \newif\if@Final
133 \@Finalfalse

\ThesisType  Global headings that are set according to the thesis type options.
\PromotorText 134 \newcommand{\ThesisType}{}
\PromotorsText 135 \newcommand{\PromotorText}{}
136 \newcommand{\PromotorsText}{}

report: For normal reports an assignments.
137 \DeclareOption{report}{%
138   \renewcommand{\ThesisType}{\TypeReport}%
139   \renewcommand{\PromotorText}{\StudyLeaderType}
140   \renewcommand{\PromotorsText}{\StudyLeadersType}
141   \@Reporttrue
142   \@Mastersfalse
143   \@PhDfalse}

masters-a: Masters with and assignment.
144 \DeclareOption{masters-a}{%
145   \renewcommand{\ThesisType}{\TypeAssignment}%
146   \renewcommand{\PromotorText}{\StudyLeaderType}
147   \renewcommand{\PromotorsText}{\StudyLeadersType}
148   \@Reportfalse
149   \@Masterstrue
150   \@PhDfalse}

masters-t: Masters with a thesis.
151 \DeclareOption{masters-t}{%
152   \renewcommand{\ThesisType}{\TypeThesis}%
153   \renewcommand{\PromotorText}{\StudyLeaderType}%
154   \renewcommand{\PromotorsText}{\StudyLeadersType}%
155   \@Reportfalse
156   \@Masterstrue
157   \@PhDfalse}

PhD: PhD dissertation handed in for examination.
158 \DeclareOption{PhD}{%
159   \renewcommand{\ThesisType}{\TypePhD}%
160   \renewcommand{\PromotorText}{\PromotorType}%
161   \renewcommand{\PromotorsText}{\PromotorsType}%
162   \@Reportfalse
163   \@Mastersfalse
164   \@PhDtrue
165   \@Finalfalse}

PhDfinal: Excepted PhD dissertation handed in for publication.
166 \DeclareOption{PhDfinal}{%
167   \renewcommand{\ThesisType}{\TypePhD}%
168   \renewcommand{\PromotorText}{\PromotorType}%
169   \renewcommand{\PromotorsText}{\PromotorsType}%
170   \@Reportfalse
171   \@Mastersfalse
172   \@PhDtrue
173   \@Finaltrue}

```

### 4.3.3 Page layout options

Intercept 2-column requests.

```

174 <*cls>
175 \DeclareOption{twocolumn}{%
176 </cls>

\if@ABlock  Flags for a5block, goldenblock and wideblock options.
\if@GBlock  177 \newif\if@ABlock
\if@WBlock  178 \newif\if@GBlock
            179 \newif\if@WBlock
            180 \@ABlockfalse
            181 \@GBlockfalse
            182 \@WBlockfalse

a5block: An A5 type block area.
183 \DeclareOption{a5block}{%
184 <cls> \PassOptionsToClass{a4paper}{\US@basetype}%
185 \@ABlocktrue
186 \@GBlockfalse
187 \@WBlockfalse}

goldenblock: A golden section type block area.
188 \DeclareOption{goldenblock}{%
189 <cls> \PassOptionsToClass{a4paper}{\US@basetype}%
190 \@GBlocktrue
191 \@ABlockfalse
192 \@WBlockfalse}

wideblock: A type block with 25 mm margins.
193 \DeclareOption{wideblock}{%
194 <cls> \PassOptionsToClass{a4paper}{\US@basetype}%
195 \@GBlockfalse
196 \@ABlockfalse
197 \@WBlocktrue}

stdblock: Standard LATEX type block area.
198 \DeclareOption{stdblock}{%
199 \@GBlockfalse
200 \@ABlockfalse
201 \@WBlockfalse}

```

### 4.3.4 Process package options

```

202 <cls>\DeclareOption*{\PassOptionsToClass{\CurrentOption}{\US@basetype}}
203 \ExecuteOptions{report}
204 \ProcessOptions*relax
205 <cls>\LoadClass[oneside,openany]{\US@basetype}

```

## 4.4 Temporaries

```

206 \newlength{\US@tdima}
207 \newlength{\US@tdimb}
208 \newsavebox{\US@tboxa}
209 \newcounter{\US@tcnta}
210 \newcounter{\US@tcntb}

```

## 4.5 Page layout

`\FixVertParams` Reset all the vertical parameters for a page layout. Note that `memoir` has its own setup.

```

211 <*cls>
212 \newcommand\FixVertParams[1]{%
213     \normalsize
214     \setlength\US@tdima{\textheight-\topskip}%
215     \setcounter{US@tcnta}{\US@tdima}
216     \setcounter{US@tcntb}{\baselineskip}
217     \setcounter{US@tcnta}{\value{US@tcnta}/\value{US@tcntb}}
218     \setlength\textheight{\baselineskip*\value{US@tcnta}+\topskip}%
219     \setlength\US@tdima{\paperheight-\textheight}%
220     \setlength\topmargin{#1\US@tdima-\headheight-\headsep-1in}%
221     \@settopoint\topmargin}
222 </cls>

```

`\FixHorizParams` Reset all the horizontal parameters for a page layout. Note that `memoir` has its own setup.

```

223 <*cls>
224 \newcommand\FixHorizParams[1]{%
225     \@settopoint\textwidth
226     \setlength\US@tdima{\paperwidth-\textwidth}%
227     \if@twoside
228         \setlength\oddsidemargin{#1\US@tdima-1in}%
229     \else
230         \setlength\oddsidemargin{.5\US@tdima-1in}%
231     \fi
232     \@settopoint\oddsidemargin
233     \setlength\evensidemargin{\US@tdima-\oddsidemargin-2in}%
234     \@settopoint\evensidemargin
235     \setlength\marginparwidth{\evensidemargin+1in-\marginparsep-1cm}%
236     \@settopoint\marginparwidth}
237 </cls>

```

### 4.5.1 A5 type block area

```

238 <*cls>
239 \if@ABlock
240     \setlength\paperheight {297.3mm}
241     \setlength\paperwidth  {210.2mm} % A4 paper
242     \setlength\textwidth   {.5\paperheight}
243     \setlength\textheight  {\paperwidth}
244     \setlength\marginparsep {7\p@}
245     \setlength\marginparpush{7\p@}
246     \FixVertParams{0.375}
247     %\FixHorizParams{0.375}
248     \FixHorizParams{0.5}% Changed in v3.0
249     \ifpdf
250         \setlength\pdfpagewidth{\paperwidth}
251         \setlength\pdfpageheight{\paperheight}
252     \fi
253 \fi
254 </cls>

```

```

255 <*mem>
256 \if@ABlock
257     \setstocksize{297.3mm}{210.2mm}% A4 paper
258     \settrimmedsize{\stockheight}{\stockwidth}{*}
259     \settypeblocksize{\paperwidth}
260         {.5\paperheight}{*}% A5 text block
261     \setulmargins{*}{*}{1.666667} % 5:3
262     \if@twoside
263         %\setlrmargins{*}{*}{1.666667} % 5:3
264         \setlrmargins{*}{*}{1.000000} % 1:1 Changed in v3.0
265     \else
266         \setlrmargins{*}{*}{1.000000} % 1:1
267     \fi
268     \checkandfixthelayout
269     \setlength{\headwidth}{\textwidth}
270 \fi
271 </mem>

```

#### 4.5.2 Golden section type block area

```

272 <*cls>
273 \if@GBlock
274     \setlength\paperheight {297.3mm}
275     \setlength\paperwidth  {210.2mm} % A4 paper
276     \setlength\textheight  {0.747547\paperheight}
277     \setlength\textwidth   {0.666667\paperwidth}
278     \setlength\marginparsep {7\p@}
279     \setlength\marginparpush {7\p@}
280     \FixVertParams{0.375}
281     %\FixHorizParams{0.375}
282     \FixHorizParams{0.5}% Changed in v3.0
283     \ifpdf
284         \setlength\pdfpagewidth{\paperwidth}
285         \setlength\pdfpageheight{\paperheight}
286     \fi
287 \fi
288 </cls>
289 <*mem>
290 \if@GBlock
291     \setstocksize{297.3mm}{210.2mm}
292     \settrimmedsize{\stockheight}{\stockwidth}{*}
293     \settypeblocksize{0.747547\paperheight}
294         {0.666667\paperwidth}{*}% Golden ratio block
295     \setulmargins{*}{*}{1.666667} % 5:3
296     \if@twoside
297         %\setlrmargins{*}{*}{1.666667} % 5:3
298         \setlrmargins{*}{*}{1.000000} % 1:1 Changed in v3.0
299     \else
300         \setlrmargins{*}{*}{1.000000} % 1:1
301     \fi
302     \checkandfixthelayout
303     \setlength{\headwidth}{\textwidth}
304 \fi
305 </mem>

```

### 4.5.3 Wide type block area

```

306 <*cls>
307 \if@WBlock
308   \setlength\paperheight {297.3mm}
309   \setlength\paperwidth  {210.2mm} % A4 paper
310   \setlength\textheight  {\paperheight-50mm}
311   \setlength\textwidth   {\paperwidth-50mm}
312   \setlength\marginparsep {7\p@}
313   \setlength\marginparpush {7\p@}
314   \FixVertParams{0.5}
315   \FixHorizParams{0.5}
316   \ifpdf
317     \setlength\pdfpagewidth{\paperwidth}
318     \setlength\pdfpageheight{\paperheight}
319   \fi
320 \fi
321 </cls>

322 <*mem>
323 \if@WBlock
324   \setstocksize{297.3mm}{210.2mm}
325   \settrimmedsize{\stockheight}{\stockwidth}{*}
326   \setlrmarginsandblock{25mm}{25mm}{*}
327   \setulmarginsandblock{25mm}{25mm}{*}
328   \checkandfixthelayout
329   \setlength{\headwidth}{\textwidth}
330 \fi
331 </mem>

```

### 4.6 Utility commands

`\US@ifempty` Test for a empty argument (Wilson, Arseneau in ifmtarg)

```

332 \begingroup
333   \catcode'\Q=3
334   \long\gdef\US@ifempty#1{\US@xifempty#1QQ\@secondoftwo\@firstoftwo\@nil}
335   \long\gdef\US@xifempty#1#2Q#3#4#5\@nil{#4}
336 \endgroup

```

`US@adjustwidth` Adjust the width of a paragraph. It differs from the memoir environment `AdjustWidth` in that all top and bottom spaces are removed.

```

337 \newenvironment{US@adjustwidth}[2]{%
338   \begin{list}{}{%
339     \setlength{\topsep}{0pt}%
340     \setlength{\partopsep}{0pt}%
341     \setlength{\leftmargin}{#1}%
342     \setlength{\rightmargin}{#2}%
343     \setlength{\listparindent}{\parindent}%
344     \setlength{\itemindent}{\parindent}%
345     \setlength{\parsep}{\parskip}%
346   }%
347   \item[]{\end{list}}

```

`SetMargins` Adjust the margins of a paragraph. The parameter `#1` and `#2` are the left and right margins of the paragraph.

```

348 \newenvironment{SetMargins}[2]%
349   {\setlength{\US@tdima}{-1in-\hoffset-\oddsidemargin}%
350    \setlength{\US@tdimb}{-\US@tdima}%
351    \addtolength{\US@tdima}{#1}%
352    \addtolength{\US@tdimb}{-\paperwidth+\textwidth+#2}%
353    \begin{US@adjustwidth}{\US@tdima}{\US@tdimb}%
354   }%
355   {\end{US@adjustwidth}}

```

## 4.7 Front pages

### 4.7.1 Title page

`US@titlepage` Make a single column empty page with predefined margins

```

\begin{US@titlepage}{\top}{\bottom}{\left}{\right}
  \titlepage
\end{US@titlepage}

356 \newenvironment{US@titlepage}[4]
357   {\cleardoublepage
358    \if@twocolumn
359      \@restonecoltrue\onecolumn
360    \else
361      \@restonecolfalse\newpage
362    \fi
363    \thispagestyle{empty}%
364    \setcounter{page}\@ne

    Set the top margin by moving the starting point up.

365    \setlength{\US@tdima}{1in+\voffset+\topmargin+\headheight+\headsep+\topskip}%
366    \setlength{\US@tdimb}{#1 -\US@tdima}%
367    \vspace*{\US@tdimb}%

    Set the bottom margin by enlarging the page

368    \addtolength{\US@tdima}{\textheight-\paperheight-\topskip}%
369    \addtolength{\US@tdima}{#2}%
370    \enlargethispage{-\US@tdima}%

    Set the left and right margins by putting the contents in a list environ-
    ment with widened margins.

371    \setlength{\US@tdima}{-1in-\hoffset-\oddsidemargin}%
372    \setlength{\US@tdimb}{-\US@tdima}%
373    \addtolength{\US@tdima}{#3}%
374    \addtolength{\US@tdimb}{-\paperwidth+\textwidth+#4}%
375    \begin{US@adjustwidth}{\US@tdima}{\US@tdimb}%
376   }%
377   {\end{US@adjustwidth}%
378    \if@restonecol\twocolumn \else \newpage \fi
379    \if@twoside\else
380      \setcounter{page}\@ne
381    \fi}

    Undefine the standard title page.

382 \let\maketitle\relax

```

*The title page*

`\TitlePage` The `\TitlePage` command set the full front page for the US theses and reports. All margins, spacing and font sizes must be set inside this command.

```

383 \newcommand{\TitlePage}{%
384   \begingroup
385     \let\footnote\relax
386     \begin{US@titlepage}{2cm}{2.5cm}{2.5cm}{2.5cm}%
387       \centering
388       \if@Report
389         \includegraphics[width=100mm]{USlogo-top}\par
390       \else
391         %\includegraphics[width=88mm]{UScrest-top}\par
392       \fi
393       \vfill
394       {\LARGE \@title \par}
395       \vspace{2em}
396       \if@Authorpresent
397         {\large \AuthByTxt\par}
398         \vspace{2em}
399         {\Large
400           \lineskip .75em\relax%
401           \begin{tabular}[t]{c}%
402             \US@authorlong
403           \end{tabular}\par}%
404         \vfill
405       \fi
406       \if@Report\if@Subjectpresent
407         {\large\DegreeNameLong\par}
408         \vfill
409       \fi\fi
410       {\large\slshape
411         \begin{US@adjustwidth}{1.5cm}{1.5cm}
412           \centering\US@ThesisDescript
413         \end{US@adjustwidth}\par}
414       \vfill
415       {\US@address\par}
416       \vfill
417       {\normalsize \US@promotorset \par}
418       \vfill
419       {\large \US@date\par}%
420     \end{US@titlepage}%
421   \endgroup
422   \global\let\TitlePage\relax
423   \setcounter{footnote}{0}%
424   \global\let\thanks\relax
425   \global\let\@thanks\@empty
426 %   \global\let\and\relax
427 }
```

*Author block*

```

428 \newif\if@Authorpresent
429 \@Authorpresentfalse
```

```

430 \renewcommand\author[2]{%
431   \@Authorpresenttrue%
432   \gdef\US@author{#1}%
433   \gdef\US@authorlong{#2}}

434 \newcommand\US@author{%
435 <cls>   \ClassWarning{usthesis}{No author supplied}%
436 <mem>   \PackageWarning{usthesis}{No author supplied}%
437   }

438 \newcommand\US@authorlong{%
439 <cls>   \ClassWarning{usthesis}{No author supplied}%
440 <mem>   \PackageWarning{usthesis}{No author supplied}%
441   }

```

### *Thesis or report description*

```

442 \newcommand{\US@ThesisDescript}{%}

\ThesisDescript

443 \newcommand\ThesisDescript[1]{%
444   \long\gdef\US@ThesisDescript{#1}}

445 \let\ReportDescript=\ThesisDescript

446 \if@Masters
447   \ThesisDescript{\MasterDescript}
448 \fi

449 \if@PhD
450   \if@Final
451     \ThesisDescript{\PhDFinalDescript}
452   \else
453     \ThesisDescript{\PhDDescript}%
454   \fi
455 \fi

```

### *Degree or subject*

```

\if@Subjectpresent

456 \newif\if@Subjectpresent
457 \@Subjectpresentfalse

    See beginning of class for \DegreeName and \DegreeNameLong.

458 \newcommand\degree[2]{%
459   \@Subjectpresenttrue
460   \gdef\DegreeName{#1}%
461   \gdef\DegreeNameLong{#2}}

462 \let\subject=\degree

```

### *Address and faculty*

```

\address

463 \newcommand\address[1]{\gdef\US@address{#1}}
464 \let\adress\address % backward compatibility :-)

```



```

465 \newcommand\US@address{%
466 <cls> \ClassWarning{usthesis}{No institutional address supplied}}
467 <mem> \PackageWarning{usthesis}{No institutional address supplied}}

```

\faculty

```

468 \newcommand\faculty[1]{\gdef\USfaculty{#1}}

469 \newcommand\USfaculty{%
470 <cls> \ClassWarning{usthesis}{No faculty supplied}}
471 <mem> \PackageWarning{usthesis}{No faculty supplied}}

```

### *Promotor or study leader*

\if@Promotorpresent

```

472 \newif\if@Promotorpresent
473 \@Promotorpresentfalse

474 \newif\ifUS@multprm\US@multprmfalse
475 \newif\ifUS@prmstacked\US@prmstackedfalse

476 \newcommand\US@promotor{}
477 \newcommand*\US@prmalign{1}
478 \newcommand*\US@prmnewline{~}

```

\promotor

```

479 \newcommand{\promotor}{%
480   \@ifstar{\US@prmstackedtrue\@promotor}%
481   {\US@prmstackedfalse\@promotor}}

482 \newcommand{\@promotor}[2][1]{%
483   \US@ifempty{#2}{\@Promotorpresenttrue}%
484   \renewcommand*\US@prmalign{#1}%
485   \renewcommand\US@promotor{#2}}

486 \newcommand{\US@promotorset}{%
487   \if@Promotorpresent
488     \edef\US@beginTab{%
489       \noexpand\begin{tabular}[t]{@{}US@prmalign @{}}}%
490     \edef\US@endTab{%
491       \noexpand\end{tabular}}%
492     \sbox{\US@tboxa}{%
493       \let\and\US@prm@and%
494       \US@beginTab%
495       \US@promotor%
496       \US@endTab}%
497     \ifUS@prmstacked
498       \makebox[\wd\US@tboxa][\US@prmalign]{%
499         \ifUS@multprm\PromotersText\else\PromotorText\fi}\\[1ex]%
500       \usebox{\US@tboxa}%
501     \else
502       \ifUS@multprm\PromotersText\else\PromotorText\fi
503       \US@prmnewline%
504       \usebox{\US@tboxa}%
505     \fi
506   \fi
507 }

```

```

508 \newcommand*{\US@prm@and}[1][2ex]{%
509     \gdef\US@prmnewline{\[2ex]}%
510     \global\US@multprmtrue%
511     \ifUS@prmstacked
512         \[1]%
513     \else
514         \US@endTab
515         \hskip 1em \@plus.17fil\relax
516         \US@beginTab
517     \fi
518     \ignorespaces}
519 \let\studyleader\promotor
520 \let\supervisor\promotor

```

### *Date*

```

521 \newcount\US@month
522 \newcount\US@year

523 \US@month=0
524 \US@year=\number\year
525 \def\US@date{\MonthName{\US@month}\ \number\US@year}

526 \newcommand{\setdate}[2]{%
527     \US@ifempty{#1}{\US@month=0}{\US@month=#1}%
528     \US@year=#2
529     \gdef\US@date{\MonthName{\US@month}\ \number\US@year}}

```

### 4.7.2 Copyright page

From 2007 the copyright declaration must be at the bottom of the declaration page.

#### `\CopyrightPage`

```

530 \newcommand\CopyrightPage[1][\CopyrightHolder]{%
531     \%clearpage
532     \%thispagestyle{empty}
533     \%mbox{}\par\vfill
534     \%begin{center}
535     % \CopyrightTxt\ \copyright\ \number\US@year\ #1\\
536     % \CopyrightAnot
537     \%end{center}
538     \%vfill\mbox{}\par
539     \%clearpage
540 }

```

`\SetCopyrightHolder` Macro to change the default copyright holder.

```

541 \newcommand\SetCopyrightHolder[1]{%
542     \renewcommand\CopyrightHolder{#1}}

```

`\SetCopyrightOff` Switch copyright output off.

```

543 \newif\ifUS@Copyright
544 \US@Copyrighttrue
545 \newcommand\SetCopyrightOff{%
546     \US@Copyrightfalse}

```

### 4.7.3 Declaration page

`\DeclarationSign` Optional commands to insert a signature and a signed date on declaration page.

```

\DeclarationDate 547 \let\US@DeclSign\@empty
548 \let\US@DeclDate\@empty
549 \newcommand{\DeclarationSign}[1]{\renewcommand\US@DeclSign{#1}}
550 \newcommand{\DeclarationDate}[1]{\renewcommand\US@DeclDate{#1}}

551 \newcommand\US@putdeclsign{%
552     \ifx\US@DeclSign\@empty\relax\else
553         \vspace{0.5cm}
554         \noindent
555         \begin{minipage}{.5\textwidth}
556             \noindent
557             \phantom{\Signat:}\hfill\US@DeclSign\hfill\mbox{}\hspace*{-.5\baselineskip}
558             \Signat:\dotfill\mbox{}\hspace*{-.5\baselineskip}
559             \phantom{\Signat:}\hfill\makebox[0pt][c]{\US@author}\hfill\mbox{}
560         \end{minipage}
561         \par
562     \fi}

563 \newcommand\US@putdecldate{%
564     \vspace{1cm}
565     \noindent
566     \begin{minipage}{.5\textwidth}
567         \noindent
568         \ifx\US@DeclDate\@empty\relax\else
569             \phantom{\Signat:}\hfill\makebox[0pt][c]{\US@DeclDate}\hfill\mbox{}\hspace*{-.5\baselineskip}
570         \fi
571         \Datetxt:\dotfill\mbox{}\par
572     \end{minipage}
573     \par}

```

`\DeclarationPage` Set up the declaration page. The `\ThesisDeclare[<declaration>]` command has an optional argument to set a different declaration.

```

574 \newcommand{\DeclarationPage}[1][\ThesisDeclare]{%
575     \if@twocolumn
576         \@restonecoltrue\onecolumn
577     \else
578         \@restonecolfalse
579     \fi
580     \par
581     \thispagestyle{plain}%
582     \chapter*{\DeclarationName}%
583     \declaremark
584     \phantomsection
585     \addcontentsline{toc}{chapter}{\DeclarationName}%
586     #1\par
587     \US@putdeclsign
588     \US@putdecldate
589     \ifUS@Copyright
590         \mbox{}\par
591         \vfill
592         \vfill
593         \noindent\CopyrightTxt\ \copyright\ \number\US@year\ \CopyrightHolder\

```

```

594      \noindent\CopyrightAnot
595      \vfill
596      \mbox{}\par
597  \fi
598  \if@restonecol\twocolumn\fi}

```

#### 4.7.4 Abstract page

**abstract** Provides the environment

```

\begin{abstract}[\lang]
  \langle abstract text \rangle
\end{abstract}

```

to typeset the abstract. A different language can be selected with the optional argument to the environment.

```

599 \cls\newenvironment{abstract}[1][\language]{%
600 \mem\renewenvironment{abstract}[1][\language]{%
601   {\edef\@tempa{\expandafter\string #1}%
602    \ifx\@tempa\language\relax\else
603     \edef\@tempa{\noexpand\selectlanguage{#1}}\@tempa%
604    \fi
605    \if@twocolumn
606     \@restonecoltrue\onecolumn
607    \else
608     \@restonecolfalse
609    \fi
610    \par
611    \chapter*{\AbstractName}%
612    \abstractmark
613    \phantomsection
614    \addcontentsline{toc}{chapter}{\AbstractName}%
615    \if@Report\else
616      \begin{center}
617        {\large\bfseries \@title \par}
618        \medskip
619        {\lineskip .75em\relax%
620         \begin{tabular}[t]{@{}c@{}}%
621           \US@author
622         \end{tabular}\par}
623        \smallskip
624        {\small\itshape\US@address\par}
625        \smallskip
626        {\ThesisType: \DegreeName\par}
627        \smallskip
628        {\US@date\par}
629      \end{center}
630    \fi
631    \if@restonecol\twocolumn\fi%
632  }{}

```

#### 4.7.5 Table of contents

```

633 \*cls

```

```

634 \renewcommand\tableofcontents{%
635     \if@twocolumn
636         \@restonecoltrue\onecolumn
637     \else
638         \@restonecolfalse
639     \fi
640     \chapter*{\contentsname}%
641     \tocmark
642     \phantomsection
643     \addcontentsline{toc}{chapter}{\contentsname}%
644     \@starttoc{toc}%
645     \if@restonecol\twocolumn\fi
646 \</cls>

```

#### 4.7.6 List of figures

```

647 \<cls>
648 \renewcommand\listoffigures{%
649     \if@twocolumn
650         \@restonecoltrue\onecolumn
651     \else
652         \@restonecolfalse
653     \fi
654     \chapter*{\listfigurename}%
655     \lofmark
656     \phantomsection
657     \addcontentsline{toc}{chapter}{\listfigurename}%
658     \@starttoc{lof}%
659     \if@restonecol\twocolumn\fi
660 }
661 \renewcommand*\l@figure{\@dottedtocline{1}{0em}{3em}}
662 \</cls>

```

#### 4.7.7 List of tables

```

663 \<cls>
664 \renewcommand\listoftables{%
665     \if@twocolumn
666         \@restonecoltrue\onecolumn
667     \else
668         \@restonecolfalse
669     \fi
670     \chapter*{\listtablename}%
671     \lotmark
672     \phantomsection
673     \addcontentsline{toc}{chapter}{\listtablename}%
674     \@starttoc{lot}%
675     \if@restonecol\twocolumn\fi
676 \let\l@table\l@figure
677 \</cls>

```

## 4.8 Back matter

### 4.8.1 Bibliography

`\bibsection` natbib uses the `\bibsection` command. We change the `thebibliography` to use it also.

```

678 <*cls>
679 \providecommand\bibsection{}%
680 \AtBeginDocument{%
681     \renewcommand{\bibsection}{%
682         \chapter*{\bibname}%
683         \bibmark
684         \phantomsection
685         \addcontentsline{toc}{chapter}{\bibname}}%
686     }
687 </cls>

```

`thebibliography` The environment is a mixture of code from `book.cls` and `natbib`

```

688 <*cls>
689 \renewenvironment{thebibliography}[1]{%
690     \bibsection
691     \parindent \z@
692     \bibpreamble
693     \bibfont
694     \list{\@biblabel{\@arabic{c@enumiv}}}%
695         {\settowidth\labelwidth{\@biblabel{#1}}%
696         \leftmargin\labelwidth
697         \advance\leftmargin\labelsep
698         \@openbib@code
699         \usecounter{enumiv}%
700         \let\p@enumiv\@empty
701         \renewcommand\theenumiv{\@arabic{c@enumiv}}}%
702     \sloppy
703     \clubpenalty4000
704     \@clubpenalty \clubpenalty
705     \widowpenalty4000%
706     \sfcode'\. \@m}
707 {\def\@noitemerr{\@latex@warning{Empty 'thebibliography' environment}}%
708 \endlist
709 \vskip-\lastskip}
710 </cls>

```

`\bibfont` Command to change font sizes.

`\bibpreamble` The user can add stuff before the bibliography.

```

711 <*cls>
712 \let\bibfont\relax
713 \let\bibpreamble\relax
714 </cls>

```

`\setbiblabel` A user command to change the bib label format .

```

715 <*cls>
716 \newcommand*\setbiblabel[1]{%
717     \renewcommand*\@biblabel[1]{#1}}

```

```

718 \setbiblabel{[#1]\hfill}
719 \</cls>

```

## 4.8.2 Index

theindex

```

720 \<*\cls>
721 \renewenvironment{theindex}
722   {\if@twocolumn
723     \@restonecolfalse
724     \else
725       \@restonecoltrue
726     \fi
727     \columnseprule \z@
728     \columnsep 35\p@
729     \twocolumn[\@makeschapterhead{\indexname}]\%
730     \indexmark
731     \phantomsection
732     \addcontentsline{toc}{chapter}{\indexname}
733     \thispagestyle{plain}
734     \parindent\z@
735     \parskip\z@ \@plus .3\p@\relax
736     \let\item\@idxitem}
737   {\if@restonecol
738     \onecolumn
739     \else
740       \clearpage
741     \fi}
742 \</cls>

```

## 4.9 Page markup

### 4.9.1 Headers and footers

\US@headfnt Font for running headers.

\US@numfnt Font for running header numbers.

```

743 \newcommand*\US@headfnt[1]{\slshape\small#1}
744 \newcommand*\US@numfnt[1]{\normalsize\bfseries#1}

```

Define the `usthesis` page style The setup for headers and footers differs between the normal book class and memoir, therefor we split them up.

*Headers for normal book class*

```

745 \<*\cls>
746 \if@twoside
747   \def\ps@usthesis{%
748     \def\@evenhead{\US@numfnt{\thepage}\hfil\US@headfnt{\leftmark}}\%
749     \def\@oddhead{\US@headfnt{\rightmark}\hfil\US@numfnt{\thepage}}\%
750     \let\@oddfoot\@empty
751     \let\@evenfoot\@empty
752     \let\@mkboth\markboth
753     \def\chaptermark##1{%
754       \markboth{\MakeUppercase{#1}}

```

```

755         \ifnum \c@secnumdepth > \m@ne
756             \if@mainmatter
757                 \@chapapp\ thechapter. \ %
758             \fi
759         \fi
760         ##1}}{}%
761     \def\sectionmark##1{%
762         \markright{\MakeUppercase{%
763             \ifnum \c@secnumdepth > \z@
764                 \thesection. \ %
765             \fi
766             ##1}}}%
767     \def\declaremark{\markboth{\MakeUppercase{\DeclarationName}}{}}%
768     \def\abstractmark{\markboth{\MakeUppercase{\AbstractName}}{}}%
769     \def\tocmark{\markboth{\MakeUppercase{\contentsname}}{}}%
770     \def\lofmark{\markboth{\MakeUppercase{\listfigurename}}{}}%
771     \def\lotmark{\markboth{\MakeUppercase{\listtablename}}{}}%
772     \def\bibmark{\markboth{\MakeUppercase{\bibname}}{}}%
773     \def\indexmark{\markboth{\MakeUppercase{\indexname}}{}}%
774 }
775 \else
776     \def\ps@usthesis{%
777         \def\@oddhead{\US@headfnt{\rightmark}\hfil\US@numfnt{\thepage}}%
778         \let\@oddfoot\@empty
779         \let\@mkboth\markboth
780         \def\chaptermark##1{%
781             \markright{\MakeUppercase{%
782                 \ifnum \c@secnumdepth > \m@ne
783                     \if@mainmatter
784                         \@chapapp\ thechapter. \ %
785                     \fi
786                 \fi
787                 ##1}}}%
788         \def\declaremark{\markright{\MakeUppercase{\DeclarationName}}}%
789         \def\abstractmark{\markright{\MakeUppercase{\AbstractName}}}%
790         \def\tocmark{\markright{\MakeUppercase{\contentsname}}}%
791         \def\lofmark{\markright{\MakeUppercase{\listfigurename}}}%
792         \def\lotmark{\markright{\MakeUppercase{\listtablename}}}%
793         \def\bibmark{\markright{\MakeUppercase{\bibname}}}%
794         \def\indexmark{\markright{\MakeUppercase{\indexname}}}%
795     }
796 \fi

Redefine the plain page style.
797 \def\ps@plain{%
798     \let\@mkboth\@gobbletwo
799     \let\@oddhead\@empty
800     \let\@evenhead\@empty
801     \def\@oddfoot{\reset@font\hfil\US@numfnt{\thepage}\hfil}%
802     \let\@evenfoot\@oddfoot
803 }
804 \</cls>

```

*Headers for use with memoir class*



```

805 (*mem)
806 \makepagestyle{usthesis}

807 \setlength{\headwidth}{\textwidth}
808 \makerunningwidth{usthesis}{\headwidth}
809 \makeheadposition{usthesis}{flushright}{flushleft}{flushright}{flushleft}

810 \if@twoside
811     \makepsmarks{usthesis}{%
812         \let\mkboth\markboth
813         \def\chaptermark##1{%
814             \markboth{\MakeUppercase{%
815                 \ifnum \c@secnumdepth >\m@ne
816                     \if@mainmatter
817                         \@chapapp\ thechapter. \ %
818                     \fi
819                 \fi
820                 ##1}}{}}%
821         \def\sectionmark##1{%
822             \markright{\MakeUppercase{%
823                 \ifnum \c@secnumdepth >\z@
824                     \thesection. \ %
825                 \fi
826                 ##1}}}%
827         \def\declaremark{\markboth{\MakeUppercase{\DeclarationName}}{}}%
828         \def\abstractmark{\markboth{\MakeUppercase{\AbstractName}}{}}%
829         \def\tocmark{\markboth{\MakeUppercase{\contentsname}}{}}%
830         \def\lofmark{\markboth{\MakeUppercase{\listfigurename}}{}}%
831         \def\lotmark{\markboth{\MakeUppercase{\listtablename}}{}}%
832         \def\bibmark{\markboth{\MakeUppercase{\bibname}}{}}%
833         \def\indexmark{\markboth{\MakeUppercase{\indexname}}{}}%
834     }
835     \makeevenhead{usthesis}{\US@numfnt{\thepage}}{\US@headfnt{\leftmark}}
836     \makeoddhead{usthesis}{\US@headfnt{\rightmark}}{\US@numfnt{\thepage}}
837 \else
838     \makepsmarks{usthesis}{%
839         \let\mkboth\markboth
840         \def\chaptermark##1{%
841             \markright{\MakeUppercase{%
842                 \ifnum \c@secnumdepth >\m@ne
843                     \if@mainmatter
844                         \@chapapp\ thechapter. \ %
845                     \fi
846                 \fi
847                 ##1}}}%
848         \def\declaremark{\markright{\MakeUppercase{\DeclarationName}}}%
849         \def\abstractmark{\markright{\MakeUppercase{\AbstractName}}}%
850         \def\tocmark{\markright{\MakeUppercase{\contentsname}}}%
851         \def\lofmark{\markright{\MakeUppercase{\listfigurename}}}%
852         \def\lotmark{\markright{\MakeUppercase{\listtablename}}}%
853         \def\bibmark{\markright{\MakeUppercase{\bibname}}}%
854         \def\indexmark{\markright{\MakeUppercase{\indexname}}}%
855     }
856     \makeoddhead{usthesis}{\US@headfnt{\rightmark}}{\US@numfnt{\thepage}}
857 \fi

```

Change the plain page style

```
858 \setlength{\headwidth}{\textwidth}
859 \makerunningwidth{plain}{\headwidth}
860 \makeevenfoot{plain}{}{\US@numfmt{\thepage}}{}
861 \makeoddfoot{plain}{}{\US@numfmt{\thepage}}{}
862 \mem
```

The default page style.

```
863 \pagestyle{usthesis}
```

#### 4.9.2 Chapter and section headings

```
864 \newcommand{\US@headfamily}{\normalfont\rmfamily}

865 \*cls
866 \def\section{%
867     \@startsection{section}{1}%
868         {\z@}%
869         {-3.5ex plus -1ex minus -.2ex}%
870         {2.3ex plus .2ex}%
871         {\US@headfamily\Large\bfseries\raggedright}}
872 \*cls
873 \*mem
874 \setsecheadstyle{\US@headfamily\Large\bfseries\raggedright}
875 \mem

876 \*cls
877 \def\subsection{%
878     \@startsection{subsection}{2}%
879         {\z@}%
880         {-3.25ex plus -1ex minus -.2ex}%
881         {1.5ex plus .2ex}%
882         {\US@headfamily\large\bfseries\raggedright}}
883 \*cls
884 \*mem
885 \setsubsecheadstyle{\US@headfamily\large\bfseries\raggedright}
886 \mem

887 \*cls
888 \def\subsubsection{%
889     \@startsection{subsubsection}{3}%
890         {\z@}%
891         {-3.25ex plus -1ex minus -.2ex}%
892         {1.5ex plus .2ex}%
893         {\US@headfamily\normalsize\bfseries\raggedright}}
894 \*cls
895 \*mem
896 \setsubsubsecheadstyle{\US@headfamily\normalsize\bfseries\raggedright}
897 \mem

898 \*cls
899 \def\paragraph{%
900     \@startsection{paragraph}{4}%
901         {\z@}%
902         {3.25ex plus 1ex minus .2ex}%
903         {-1em}%
904         {\US@headfamily\normalsize\bfseries}}
905 \*cls
```

```

906 <*mem>
907 \setparaheadstyle{\US@headfamily\normalsize\bfseries}
908 </mem>

909 <*cls>
910 \def\subparagraph{%
911     \@startsection{subparagraph}{5}%
912         {\parindent}%
913         {3.25ex plus 1ex minus .2ex}%
914         {-1em}%
915         {\US@headfamily\normalsize\bfseries}}
916 </cls>
917 <*mem>
918 \setsubparaheadstyle{\US@headfamily\normalsize\bfseries}
919 </mem>

```

### 4.9.3 Floats and float pages

```

920 \setcounter{topnumber}{3}
921 \setcounter{bottomnumber}{2}
922 \setcounter{totalnumber}{4}
923 \setcounter{dbltopnumber}{3}

924 \renewcommand{\topfraction}{.85}
925 \renewcommand{\bottomfraction}{.7}
926 \renewcommand{\textfraction}{.1}
927 \renewcommand{\floatpagefraction}{.7}
928 \renewcommand{\dbltopfraction}{.85}
929 \renewcommand{\dblfloatpagefraction}{.7}

930 \setlength{\floatsep}{15pt plus 12pt}
931 \setlength{\textfloatsep}{\floatsep}
932 \setlength{\intextsep}{\floatsep}
933 \setlength{\dblfloatsep}{15pt plus 12pt}
934 \setlength{\dbltextfloatsep}{15pt plus 12pt}

935 \setlength{\@fptop}{0pt plus1fil}
936 \setlength{\@fpbot}{0pt plus1fil}
937 \setlength{\@fpsep}{8pt plus1fil}
938 \setlength{\@dblftop}{0pt plus1fil}
939 \setlength{\@dblfpbot}{0pt plus1fil}
940 \setlength{\@dblfpsep}{8pt plus1fil}

```

### 4.9.4 Captions

Figures and tables use the same caption command in the standard book.cls. This causes problems with spacing, because figure captions are normally below the figure while table captions are above the table. Make the spacing equal.

Set parameters for usthesis.cls.

```

941 <*cls>
942 \setlength{\abovecaptionskip}{0.5\baselineskip}
943 \setlength{\belowcaptionskip}{0.5\baselineskip}

```

\@makecaption Redefine the caption output.

```

944 \long\def\@makecaption#1#2{%
945     \vskip\abovecaptionskip
946     \sbox\@tempboxa{\small{\bfseries #1:} #2}%

```

```

947 \ifdim \wd\@tempboxa >\hsize
948 \unhbox\@tempboxa\par
949 \else
950 \global \@minipagefalse
951 \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
952 \fi
953 \vskip\belowcaptionskip}
954 \</cls>

```

Set parameter for memoir.

```

955 \<mem>
956 \captiondelim{: }
957 \captionnamefont{\small\bfseries}
958 \captiontitlefont{\small}
959 \captionstyle{}
960 \</mem>

```

```
961 \</cls | mem>
```

The end of this package.

## Change History

v0.1		v3.0
General: Initial version . . . . .	1	General: Change twosided to symmetric layout . . . . .
v1.1		Documentation update . . . . .
General: Major code update . . . . .	1	\CopyrightPage: Remove copyright page . . . . .
v1.1a		\DeclarationPage: Add copyright to Declaration page . . . . .
General: Documentation update . . .	1	\SetCopyrightHolder: Add . . . . .
v1.1b		\SetCopyrightOff: Add . . . . .
General: Documentation update . . .	1	v4.0
v2.0		General: Documentation update . . .
General: Documentation update . . .	1	Fix ifpdf error . . . . .
Page layout . . . . .	1	Move language settings to external files . . . . .
v2.1		\if@Promotorpresent: Test if promotor is defined . . . . .
General: Bug in PhD description . . .	32	\if@Subjectpresent: Fix subject field in report option . . . . .
Documentation update . . . . .	1	v4.1
\promotor: Change for promotor/-colortbl bug . . . . .	33	\DeclarationPage: Add signature and sign date macros . . . . .
\ThesisDescript: Move layout to title page . . . . .	32	v4.2
\TitlePage: Change thesis description . . . . .	31	\faculty: Add faculty . . . . .
v2.2a		
General: Documentation update . . .	1	

## Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols		
\@ABlockfalse . . . . .	\@settopoint . . 221,	\chaptermark . . . . .
. 180, 191, 196, 200	225, 232, 234, 236	. 753, 780, 813, 840
\@ABlocktrue . . . . . 185	\@thanks . . . . . 425	\checkandfixthelayout
\@Authorpresentfalse	\@title . . . . . 394, 617	. . . . . 268, 302, 328
. . . . . 429		\ClassInfo . . . . . 79, 84
\@Authorpresenttrue 431	\_ . . . . 525, 529, 535,	\contentsname . . . . .
\@Finalfalse . . 133, 165	593, 757, 764,	. . . . . 640, 643,
\@Finaltrue . . . . . 173	784, 817, 824, 844	769, 790, 829, 850
\@GBlockfalse . . . . .		\CopyrightAnot . . . . .
. 181, 186, 195, 199		. . . . . 66, 536, 594
\@GBlocktrue . . . . . 190	<b>A</b>	\CopyrightHolder . . . . .
\@Mastersfalse . . . . .	\abovecaptionskip . .	. 64, 530, 542, 593
. 129, 142, 163, 171	. . . . . 942, 945	\CopyrightPage . . . . . <u>530</u>
\@Masterstrue . 149, 156	abstract (environ-	\CopyrightTxt . . . . .
\@PhDfalse . . . . .	ment) . . . . . <u>599</u>	. . . . . 65, 535, 593
. 131, 143, 150, 157	\abstractmark . 612,	
\@PhDtrue . . . . . 164, 172	768, 789, 828, 849	<b>D</b>
\@Promotorpresentfalse	\AbstractName . . . . .	\Datetxt . . . . . 68, 571
. . . . . 473	. . 75, 611, 614,	\dblfloatpagefraction
\@Promotorpresenttrue	768, 789, 828, 849	. . . . . 929
. . . . . 483	\address . . . . . <u>463</u>	\dblfloatsep . . . . . 933
\@Reportfalse . . . . .	\adress . . . . . 464	\dbltextfloatsep . . 934
. 148, 155, 162, 170	Afr (environment) . . . <u>31</u>	\dbltopfraction . . . 928
\@Reporttrue . . 127, 141	\and . . . . . 426, 493	\DeclarationDate . . . <u>547</u>
\@Subjectpresentfalse	\AorE . . . . . <u>29</u>	\DeclarationName . . . . .
. . . . . 457	\AuthByTxt . . . . . 55, 397	. . 74, 582, 585,
\@Subjectpresenttrue	\author . . . . . 430	767, 788, 827, 848
. . . . . 459		\DeclarationPage . . <u>574</u>
\@WBlockfalse . . . . .	<b>B</b>	\DeclarationSign . . <u>547</u>
. 182, 187, 192, 201	\belowcaptionskip . .	\declaremark . . 583,
\@WBlocktrue . . . . . 197	. . . . . 943, 953	767, 788, 827, 848
\@biblabel 694, 695, 717	\bibfont . . . . . 693, <u>711</u>	\degree . . . . . 458, 462
\@dblfpbot . . . . . 939	\bibmark . . . . . 683,	\DegreeName 46, 460, 626
\@dblfpsep . . . . . 940	772, 793, 832, 853	\DegreeNameLong . . . . .
\@dblfpsep . . . . . 940	\bibname . . 682, 685,	. . . . . 50, 407, 461
\@dblfpsep . . . . . 940	772, 793, 832, 853	
\@dblfpsep . . . . . 940	\bibpreamble . . 692, <u>711</u>	<b>E</b>
\@evenfoot . . . 751, 802	\bibsection . . . <u>678</u> , 690	Eng (environment) . . . <u>38</u>
\@evenhead . . . 748, 800	\bottomfraction . . . 925	\enlargethispage . . 370
\@fpbot . . . . . 936		environments:
\@fpsep . . . . . 937	<b>C</b>	abstract . . . . . <u>599</u>
\@fptop . . . . . 935	\captiondelim . . . . . 956	Afr . . . . . <u>31</u>
\@makecaption . . . . . <u>944</u>	\captionnamefont . . 957	Eng . . . . . <u>38</u>
\@makeschapterhead . 729	\captionstyle . . . . . 959	SetMargins . . . . . <u>348</u>
\@oddfoot . . . . .	\captiontitlefont . 958	thebibliography <u>688</u>
. 750, 778, 801, 802	\chapter . . 582, 611,	theindex . . . . . <u>720</u>
\@oddhead . 749, 777, 799	640, 654, 670, 682	US@adjustwidth . <u>337</u>
\@promotor . . . 480–482		US@titlepage . . . <u>356</u>

- \evensidemargin 233–235
- F**
- \faculty ..... 468
- \FixHorizParams ...  
.... 223, 247,  
248, 281, 282, 315
- \FixVertParams ....  
. 211, 246, 280, 314
- \floatpagefraction . 927
- \floatsep .... 930–932
- I**
- \if@ABlock 177, 239, 256
- \if@Authorpresent .  
..... 396, 428
- \if@Final .... 132, 450
- \if@GBlock 177, 273, 290
- \if@mainmatter ....  
. 756, 783, 816, 843
- \if@Masters ... 128, 446
- \if@PhD ..... 130, 449
- \if@Promotorpresent  
..... 472, 487
- \if@Report .....  
. 126, 388, 406, 615
- \if@restonecol ....  
. 378, 598, 631,  
645, 659, 675, 737
- \if@Subjectpresent .  
..... 406, 456
- \if@WBlock 177, 307, 323
- \ifpdf .... 249, 283, 316
- \ifUS@Copyright 543, 589
- \ifUS@multprm .....  
.... 474, 499, 502
- \ifUS@prmstacked ..  
.... 475, 497, 511
- \indexmark ... 730,  
773, 794, 833, 854
- \indexname 729, 732,  
773, 794, 833, 854
- \InputIfFileExists .  
..... 76, 81
- L**
- \l@figure .... 661, 676
- \l@table ..... 676
- \language name .. 30,  
32, 40, 599, 600, 602
- \listfigurename ...  
.... 654, 657,  
770, 791, 830, 851
- \listoffigures .... 648
- \listoftables ..... 664
- \lofmark ..... 655,  
770, 791, 830, 851
- \lotmark ..... 671,  
771, 792, 831, 852
- M**
- \makeevenfoot ..... 860
- \makeevenhead ..... 835
- \makeheadposition . 809
- \makeoddfoot ..... 861
- \makeoddhead .. 836, 856
- \makepagestyle .... 806
- \makepsmarks .. 811, 838
- \makerunningwidth .  
..... 808, 859
- \maketitle ..... 382
- \marginparpush ....  
.... 245, 279, 313
- \marginparsep .....  
. 235, 244, 278, 312
- \marginparwidth 235, 236
- \MasterDescript 69, 447
- \MonthName 73, 525, 529
- N**
- \newcounter ... 209, 210
- P**
- \pagestyle ..... 863
- \pdfpageheight ....  
.... 251, 285, 318
- \pdfpagewidth .....  
.... 250, 284, 317
- \phantomsection 21,  
584, 613, 642,  
656, 672, 684, 731
- \PhDDescript ... 70, 453
- \PhDFinalDescript .  
..... 71, 451
- \ProcessOptions ... 204
- \promotor . 479, 519, 520
- \PromotorsText 134,  
140, 147, 154,  
161, 169, 499, 502
- \PromotorsType ....  
.... 59, 161, 169
- \PromotorText . 134,  
139, 146, 153,  
160, 168, 499, 502
- \PromotorType .....  
.... 58, 160, 168
- \ps@plain ..... 797
- \ps@usthesis .. 747, 776
- Q**
- \Q ..... 333
- R**
- \ReportDescript ... 445
- S**
- \sectionmark .. 761, 821
- \selectlanguage ...  
..... 33, 41, 603
- \setbiblabel ..... 715
- \SetCopyrightHolder 541
- \SetCopyrightOff .. 543
- \setdate ..... 526
- \setlength .....  
. 214, 218–220,  
226, 228, 230,  
233, 235, 240–  
245, 250, 251,  
269, 274–279,  
284, 285, 303,  
308–313, 317,  
318, 329, 339–  
345, 349, 350,  
365, 366, 371,  
372, 807, 858,  
930–940, 942, 943
- \setlrmargins .....  
.... 263, 264,  
266, 297, 298, 300
- \setlrmarginsandblock  
..... 326
- SetMargins (environ-  
ment) ..... 348
- \setparaheadstyle . 907
- \setsecheadstyle .. 874
- \setstocksize .....  
.... 257, 291, 324
- \setsubparaheadstyle  
..... 918
- \setsubsecheadstyle 885
- \setsubsubsecheadstyle  
..... 896
- \settrimmedsize ...  
.... 258, 292, 325
- \settypeblocksize .  
..... 259, 293
- \setulmargins . 261, 295
- \setulmarginsandblock  
..... 327
- \Signat 67, 557–559, 569
- \stockheight .....  
.... 258, 292, 325
- \stockwidth 258, 292, 325

- `\studyleader` ..... 519  
`\StudyLeadersType` .  
     . 57, 140, 147, 154  
`\StudyLeaderType` ..  
     . 56, 139, 146, 153  
`\subject` ..... 462  
`\supervisor` ..... 520
- T**
- `\tableofcontents` .. 634  
`\textfb` ..... 49, 53  
`\textfloatsep` ..... 931  
`\textfraction` ..... 926  
`\thanks` ..... 424  
`thebibliography` (environment) ... 688  
`theindex` (environment) ..... 720  
`\ThesisDeclare` . 72, 574  
`\ThesisDescript` 443,  
     445, 447, 451, 453  
`\ThesisType` .....  
     . 134, 138, 145,  
     152, 159, 167, 626  
`\TitlePage` ..... 383  
`\topfraction` ..... 924  
`\TypeAssignment` 61, 145  
`\TypePhD` .. 63, 159, 167  
`\TypeReport` .... 60, 138  
`\TypeThesis` .... 62, 152
- U**
- `\US@addlangcaptions`  
     .... 101, 110,  
     114, 118, 122, 125  
`\US@addlangextras` .  
     .... 101, 109,  
     113, 117, 121, 124  
`\US@address` .....  
     . 415, 463, 465, 624  
`\US@addto` . 88, 103, 106  
`US@adjustwidth` (environment) ... 337
- `\US@AFRstr` .. 28, 30, 32  
`\US@author` .....  
     . 432, 434, 559, 621  
`\US@authorlong` .....  
     .... 402, 433, 438  
`\US@basetype` . 4, 184,  
     189, 194, 202, 205  
`\US@beginTab` .....  
     .... 488, 494, 516  
`\US@Copyrightfalse` . 546  
`\US@Copyrighttrue` . 544  
`\US@date` .....  
     . 419, 525, 529, 628  
`\US@DeclDate` .....  
     . 548, 550, 568, 569  
`\US@DeclSign` .....  
     . 547, 549, 552, 557  
`\US@endTab` 490, 496, 514  
`\US@ENGstr` 36, 39–41,  
     108, 112, 116, 120  
`\US@headfamily` 864,  
     871, 874, 882,  
     885, 893, 896,  
     904, 907, 915, 918  
`\US@headfnt` .....  
     . 743, 748, 749,  
     777, 835, 836, 856  
`\US@ifempty` 332, 483, 527  
`\US@month` .... 521,  
     523, 525, 527, 529  
`\US@multprmfalse` .. 474  
`\US@multprmtrue` ... 510  
`\US@numfnt` .....  
     . 743, 748, 749,  
     777, 801, 835,  
     836, 856, 860, 861  
`\US@prm@and` ... 493, 508  
`\US@prmalign` .....  
     . 477, 484, 489, 498  
`\US@prmnewline` ....  
     .... 478, 503, 509  
`\US@prmstackedfalse`  
     ..... 475, 481
- `\US@prmstackedtrue` . 480  
`\US@promotor` .....  
     .... 476, 485, 495  
`\US@promotorset` 417, 486  
`\US@putdecldate` 563, 588  
`\US@putdeclsign` 551, 587  
`\US@tboxa` .... 208,  
     492, 498, 500, 504  
`\US@tdima` .... 206,  
     214, 215, 219,  
     220, 226, 228,  
     230, 233, 349–  
     351, 353, 365,  
     366, 368–373, 375  
`\US@tdimb` . 207, 350,  
     352, 353, 366,  
     367, 372, 374, 375  
`\US@tempa` ..... 41, 42  
`\US@ThesisDescript` .  
     .... 412, 442, 444  
`US@titlepage` (environment) ..... 356  
`\US@xifempty` ... 334, 335  
`\US@year` 522, 524, 525,  
     528, 529, 535, 593
- `\UScaptionsafrikaans`  
     ..... 125  
`\UScaptionsenglish` .  
     ..... 87,  
     110, 114, 118, 122  
`\USextrasafrikaans` . 124  
`\USextrasenglish` 86,  
     109, 113, 117, 121  
`\USfaculty` ... 468, 469  
`\USfiledate` ..... 5, 10  
`\USfileversion` ... 6, 11  
`\USName` ..... 54
- V**
- `\value` ..... 217, 218
- Y**
- `\year` ..... 524