

# The **thesistu** class<sup>\*</sup>

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## **Abstract**

This class provides a  $\text{\LaTeX 2}_{\varepsilon}$  template for theses at the Faculty of Physics at the TU Wien. With a little effort it can be adapted to fit any Faculty at any Universit. In the current version, bachelor and master theses as well as dissertations are supported in both English and German.

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<sup>\*</sup>This document corresponds to **thesistu** v0.1, dated 2016/09/01.

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# 1 Introduction

This class provides a L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> template for all theses at the Faculty of Physics at the TU Wien. It can be adapted to fit any Faculty at any Universit. Further information on the document class and accompanying support can be found at <https://github.com/MaximilianHoheiser/vutphys>. Further guidelines may apply to both the format and structure of certain theses. Thesis authors are advised to consult Section 3 for a documentation of all relevant commands. Information for class developers is provided in Section 4.

# 2 Known Issues

This class is incompatible with the `minitoc` package as of version 60, due to the incompatibility of the underlying `memoir` class. Use the `titletoc` package as a replacement.

# 3 Usage for Document Authors

This section contains relevant information for authors of theses that are based on the `thesistu` document class.

## 3.1 Data

To allow the generation of the title pages, signature fields, statements, etc., several pieces of information have to be set by the author using the commands in the subsequent sections. We discern several categories of data: *(i)* textual data, which is given by a simple text string, *(ii)* persons, which are defined by their names, optional titles, and their gender, as well as, *(iii)* dates and *(iv)* list data, which allow the selection of one argument from a list of permissible arguments. Several commands have polylingual capabilities and support different languages (see Section 3.1.5). A superscript P, i.e., `\commandP`, indicates such a command.

### 3.1.1 Textual Data

```
\setaddress
\setregnumber
\settitle
\setsubtitle
\setcurriculum
\setuniversity
\setfirstreviewerdata
\setsecondreviewerdata
\setfaculty
\setinstitut
```

All commands in this section are called with one mandatory argument, e.g., as `\command{<text>}`, where `<text>` defines the content of the commands. For polylingual commands, given by `\commandP`, one `<text>` argument has to be supplied for each language (see Section 3.1.5). The following textual data can be set:

Command	Role	Type	Optional
<code>\setaddress</code>	Address of the author	All	No
<code>\setregnumber</code>	Registration number of the author	All	No
<code>\settitle<sup>P</sup></code>	Title of the thesis	All	No
<code>\setsubtitle<sup>P</sup></code>	Subtitle of the thesis	All	Yes
<code>\setcurriculum<sup>P</sup></code>	Name of the curriculum	B, M	No
<code>\setuniversity</code>	Name of the university	B, M	No
<code>\setfaculty</code>	Name of the faculty	B, M	No
<code>\setinstitut</code>	Name of the institut	B, M	No
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)			
Command	Role	Type	Optional
<code>\setfirstreviewerdata</code>	Affiliation and country of first reviewer	P	No
<code>\setsecondreviewerdata</code>	Affiliation and country of second reviewer	P	No
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)			

### 3.1.2 Persons

`\setauthor`    All commands in this section are called with four mandatory arguments, e.g., as  
`\setadvisor`    `\command{\langle pretitle \rangle}{\langle name \rangle}{\langle posttitle \rangle}{\langle gender \rangle}`, where  $\langle name \rangle$  defines both  
`\setsecondadvisor` the first name(s) and family name(s) of the person. A title that is placed before  
`\setfirstassistant` the name is assigned with  $\langle pretitle \rangle$ , while a trailing title is given with  $\langle posttitle \rangle$ .  
`\setsecondassistant` Both  $\langle pretitle \rangle$  and  $\langle posttitle \rangle$  can be left empty, to indicate an absence of such  
`\setthirdassistant` a title; the insertion of appropriate glue between titles and names is handled by  
`\setfirstreviewer` the `thesistu` class. The declaration of the persons gender via  $\langle gender \rangle$  allows  
`\setsecondreviewer` the use of gender-specific terms in languages that support them, e.g., German.  
The possible options for  $\langle gender \rangle$  are `male` and `female` (see Section 3.1.4). The  
following persons can be set:

Command	Role	Type	Optional
<code>\setauthor</code>	Author of the thesis	All	No
<code>\setadvisor</code>	Main advisor of the thesis	All	No
<code>\setsecondadvisor</code>	Second advisor of the thesis	P	Yes
<code>\setfirstassistant</code>	First advising assistant	B, M	Yes
<code>\setsecondassistant</code>	Second advising assistant	B, M	Yes
<code>\setthirdassistant</code>	Third advising assistant	B, M	Yes
<code>\setfirstreviewer</code>	First thesis reviewer	D, P	No
<code>\setsecondreviewer</code>	Second thesis reviewer	D, P	No
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)			

### 3.1.3 Dates

**\setdate** All commands in this section are called with three mandatory arguments, e.g., as **\command{<day>}{<month>}{<year>}**. The syntax is identical to the last three arguments of the **\newdate** command of the **datetime** package, from which these commands derive. The following dates can be set:

Command	Role	Type	Optional
<b>\setdate</b>	Signing date	All	No
Types: Bachelor (B), Master (M), Doctoral (D), PhD School (P), All (All)			

### 3.1.4 List Data

All commands in this section are called with at least one mandatory argument called *<list>*, e.g., as **\command...{<list>}**..., where *<list>* is given one element from a set of possible arguments.

**\setauthor** When setting a person, the person's gender is specified with a list argument (see  
**\setadvisor** Section 3.1.2):  
 ...

Command	Options	Description
<b>\command{&lt;.&gt;}{&lt;.&gt;}{&lt;.&gt;}{&lt;list&gt;}</b>	<b>male</b>	Specifies a male person.
	<b>female</b>	Specifies a female person.

**\setthesis** The thesis type is selected from one of the fundamental types:

Command	Options	Description
<b>\setthesis{&lt;list&gt;}</b>	<b>bachelor</b>	Specifies a bachelor's thesis.
	<b>master</b>	Specifies a master's thesis.
	<b>doctor</b>	Specifies a dissertation.
	<b>phd-school</b>	Specifies a dissertation at the Vienna PhD school of Informatics.

**\setmasterdegree** With a master's curriculum, different degrees can be achieved and the appropriate type has to be chosen based on the curriculum that the author is enrolled in:

Command	Options	Description
<code>\setmasterdegree{<i>list</i>}</code>	<code>dipl.</code>	Specifies the degree ‘Diplom-Ingenieur(in)’.
	<code>master</code>	Specifies the degree ‘Master of Science’.
	<code>rer.nat.</code>	Specifies the degree ‘Magist(er/ra) der Naturwissenschaften’.
	<code>rer.soc.oec.</code>	Specifies the degree ‘Magist(er/ra) der Sozial- und Wirtschaftswissenschaften’.
<code>\setdoctordegree</code>	With a doctorate study, different degrees can be achieved and the appropriate type has to be chosen based on the program that the author is enroled in:	
Command	Options	Description
<code>\setdoctordegree{<i>list</i>}</code>	<code>techn.</code>	Specifies the degree ‘Doktor(in) der Technischen Wissenschaften’.
	<code>rer.nat.</code>	Specifies the degree ‘Doktor(in) der Naturwissenschaften’.
	<code>rer.soc.oec.</code>	Specifies the degree ‘Doktor(in) der Sozial- und Wirtschaftswissenschaften’.

### 3.1.5 Polylingual Data

<code>\setcurriculum</code>	Used as <code>\setcurriculum{<i>english</i>}{<i>german</i>}</code> , it sets the name of the curriculum that the student is enroled in. The name can be given in English, with <i>english</i> , and in German, with <i>german</i> . Note that the curriculum name does not need to be supplied for all thesis types, since, e.g., doctoral studies do not have a curriculum per se. If a title page of one of the languages is not used, the corresponding argument can be left empty.
<code>\settitle</code>	Used as <code>\settitle{<i>english</i>}{<i>german</i>}</code> , it sets the title of the thesis. The title can be given both in an English version, with <i>english</i> , and in a German version, with <i>german</i> . For title pages in a given language, the corresponding title will be used. Unused languages can be supplied as empty brackets and it is possible to use the English or German title for both language versions.
<code>\setsubtitle</code>	Used as <code>\setsubtitle{<i>english</i>}{<i>german</i>}</code> , it sets the subtitle of the thesis. The same specifications as for <code>\settitle</code> apply.
<code>\setfaculty</code>	Use as <code>\setfaculty{<i>englisch</i>}{<i>german</i>}</code> , it sets the faculty name both in en-

glisch and in german, if bot the englisch and the german titlepage are used, both names mutst be supplied.

`\setinstitut` Use as `\setinstitut}{\langle english \rangle}{\langle german \rangle}`, it specifies a name for yout institut, like the `\setinstitut` macro depending on which tilepage is used, the german and, or the english name must be supplied.

`\addtitlepage` The titlepage can be generated in the following languages (see Section 3.2):

Command	Options	Description
<code>\addtitlepage{\langle list \rangle}</code>	<b>english</b>	Generates an English title page.
	<b>naustrian</b>	Generates a German title page.

Note that a non-English title page is not yet available for a dissertation at the Vienna PhD School.

## 3.2 Layout

Most of the data that is supplied with the commands of the previous sections is used to generate the front matter of the thesis. It consists of obligatory items such as the title page(s) and the statement of originality as well as optional items such as the acknowledgements or the abstract in different languages. In the remainder of this section, the available items of the front matter are given.

`\setlogo` Used as `\setlogo{\langle UNins \rangle}`, where `\langle UN \rangle` are the first two Letters of your university and `\langle ins \rangle` are the first tree letters of your institut. The Logo-File must be a vektor graphic with the .eps format. to create your own, use the given ones as referenc.

`\addtitlepage` Used as `\addtitlepage{\langle lang \rangle}`, where `\langle lang \rangle` is the name of a language as given in the **babel** package (see Section 3.1.4). The necessary pieces of information have to be set beforehand (as described in Section 3.1). This command is usually used directly after `\begin{document}\frontmatter`.

`\addstatementpage` Used as `\addstatementpage`, it generates a page with the statement of originality.

`acknowledgements`  
`acknowledgements*` Used as `\begin{acknowledgements}\langle text \rangle\end{acknowledgements}`, this environment generates a chapter with the English acknowledgements. Use the starred version, i.e., `acknowledgements*`, to remove the table of content entry of this environment.

`danksagung`  
`danksagung*` Used as `\begin{danksagung}\langle text \rangle\end{danksagung}`, this environment generates a chapter with the German acknowledgements. Use the starred version, i.e., `danksagung*`, to remove the table of content entry of this environment.

`abstract`  
`abstract*` Used as `\begin{abstract}\langle text \rangle\end{abstract}`, this environment generates a chapter with the English abstract. Use the starred version, i.e., `abstract*`, to remove the table of content entry of this environment.

`kurzfassung` Used as `\begin{kurzfassung}\text\end{kurzfassung}`, this environment generates a chapter with the German abstract. Use the starred version, i.e., `kurzfassung*`, to remove the table of content entry of this environment.

All the above sections are displayed without chapter header, chapter or section numbering and are listed and are numbered in the table of contents with roman numbers.

## 4 Usage for Class Writers

To accomodate shifting requirements, the `thesistu` class provides various convenience functions that allow the modification and extension of its functionality.

### 4.1 Data

To compose several parts of the thesis layout, input from the thesis author is required. For the `vutinfth` class, this is realized by the commands provided in Section 3.1. Additional data can be defined with the the commands in the remainder of this section.

`\CreateData` Used as `\CreateData{<name>}`, it generates a command `\set{<name>}`. Used as `\set{<name>}{<string>}`, the newly created command assigns the value `<string>` to the internal variable `\vutinfth@data@<name>`. The variable is initialized with an error value to alert the user of the fact that `<string>` was not supplied via the `\set{<name>}` command. Furthermore, a command `\vutinfth@data@<name>@def` is created, to increase source code readability when verifying the existence of a specific data item. See Section 5.2.6 for examples.

`\CreatePerson` Used as `\CreatePerson{<name>}`, it generates a command `\set{<name>}`. Used as `\set{<name>}{<pretile>}{<personname>}{<posttitle>}{<gender>}`, the newly created command assigns the supplied values to the corresponding internal variables `\vutinfth@person@<name>@...` as given in the table below.

Argument	Internal Variable
	<code>\vutinfth@person@&lt;name&gt;@def</code>
<code>&lt;pretile&gt;</code>	<code>\vutinfth@person@&lt;name&gt;@pretile</code>
<code>&lt;personname&gt;</code>	<code>\vutinfth@person@&lt;name&gt;@name</code>
<code>&lt;posttitle&gt;</code>	<code>\vutinfth@person@&lt;name&gt;@posttitle</code>
<code>&lt;gender&gt;</code>	<code>\vutinfth@person@&lt;name&gt;@gender</code>

The command `\vutinfth@person@<name>@def` is created to increase source code readability when verifying the existence of a specific person. Furthermore, the



command `\vutinfth@person@<name>@fullname` returns the person's name together with existing titles and correct whitespace in between. The person's gender is either `\vutinfth@person@male` or `\vutinfth@person@female`, depending on the input. See Section 5.2.6 for examples.

<code>\AddLanguage</code>	Used as <code>\AddLanguage{&lt;lang&gt;}</code> , it enables the language <code>&lt;lang&gt;</code> to be used by polylingual expressions. <code>&lt;lang&gt;</code> has to be chosen from the languages of the <code>babel</code> package that is used by this class. Currently, <code>thesistu</code> uses two languages, i.e., <code>english</code> for English expressions and <code>naustrian</code> for German expressions.
<code>\CreatePolylingual</code>	Used as <code>\CreatePolylingual[&lt;expressions&gt;]{&lt;name&gt;}</code> , it generates a command <code>\thesistu@polylingual@&lt;name&gt;</code> that selects the appropriate expression based on the current language at the time of use. The argument <code>&lt;expressions&gt;</code> is a list of elements of the form <code>&lt;expr<sub>i</sub>&gt;</code> , where each element defines the expression for a valid language, e.g., <code>&lt;lang<sub>i</sub>&gt;=&lt;text<sub>i</sub>&gt;</code> . <code>&lt;lang<sub>i</sub>&gt;</code> has to be chosen from the languages that were defined via <code>\AddLanguage</code> . As a convention, text that needs to start with an uppercase letter is assigned to a name that starts with an uppercase letter. The same holds for uppercase words, e.g., <code>\CreatePolylingual[english=advisor,naustrian=Betreuer]{advisor}</code> <code>\CreatePolylingual[english=Advisor,naustrian=Betreuer]{Advisor}</code> <code>\CreatePolylingual[english=ADVISOR,naustrian=BETREUER]{ADVISOR}</code> . See Section 5.2.6 for examples.

## 4.2 Layout

Several key elements in the layout of the frontmatter are encapsulated to allow a convenient extension of this functionality.

<code>\SignatureFields</code>	Used as <code>\SignatureFields[&lt;mode&gt;]{&lt;center&gt;}{&lt;right&gt;}</code> , it creates a place and date description and/or one or two signature fields. <code>&lt;mode&gt;</code> can be set to <code>y</code> , which adds an entry with date and place to the left, to <code>h</code> , which adds the corresponding whitespace, or to <code>n</code> , which adds nothing. If text is supplied to <code>&lt;center&gt;</code> , it is added below a rule, right to the possible date and place entry. If text is supplied to <code>&lt;right&gt;</code> , it is added below a rule, right to the possible signature field created by <code>&lt;center&gt;</code> . This command ensures a uniform width and positioning of the signature fields on both the title pages and the statement of originality.
<code>\SignatureBlock</code>	Used as <code>\SignatureBlock</code> , it generates the signature fields for both author and advisor.
<code>\ReviewerBlock</code>	Used as <code>\ReviewerBlock</code> , it generates the signature fields for both reviewers.
<code>\AdvisorBlock</code>	Used as <code>\AdvisorBlock</code> , it generates the name fields for both the advisor and the potential assistants.
<code>\AddTitlePage</code>	Used as <code>\AddTitlePage</code> , it generates a title page in the current language. This

command contains the placement of the header graphics, the footer, the appropriate blocks, etc.

**\AddStatementPage** Used as **\AddStatementPage**, it generates a chapter with the statement of originality together with the author's signature field.

**SFFont** Alters the sans serif font inside the environment. Called with one mandatory argument as **\begin{SFFont}{*family*}**, which determines the sans serif font family that should be used, e.g., **phv** for Helvetica.

## 5 Implementation

### 5.1 Initialization

#### 5.1.1 Class Options

Pass the options to the underlying memoir class.

```
1 \DeclareOption*{%
2   \PassOptionsToClass{\CurrentOption}{memoir}%
3 }%
4 \ProcessOptions\relax
```

#### 5.1.2 Loaded Class and Packages

The **thesistu** class is based on the **memoir** class.

```
5 \LoadClass[a4paper,11pt]{memoir}%
6 \chapterstyle{veelo}%
```

The following packages are required for the functionality and style of the document class.

```
7 \RequirePackage[scaled]{helvet}%
8 \RequirePackage{lmodern}%
9 \RequirePackage{courier}%
10 \RequirePackage[T1]{fontenc}%
11 \RequirePackage[english,naustrian]{babel}%
12 \RequirePackage[nodayofweek]{datetime}%
13 \RequirePackage{geometry}%
14 \RequirePackage{calc}%
15 \RequirePackage{etoolbox}%
16 \RequirePackage{graphicx}%
17 \graphicspath{{graphics/}}%
```

To use subfolders for each section in the graphics directory each subfolder has to be defined in the main **thesis.tex** file as a search path for latex eg:

`\graphicspath{{../graphics/chapter01}{../graphics/chapter02/}}` where the `..` is used, so that each chapter can be placed in a subfolder relative to the main `thesis.tex` file and still find the correct path for the graphics.

### 5.1.3 Low-Level Functionality

This section provides low-level functionality for macro definitions and macro expansions.

`\@namexdef` Globally defines a control sequence with an expanded argument.

```
18 \newcommand{\@namexdef}[1]{\expandafter\xdef\csname#1\endcsname}%
```

`\ifstrequal` A variant of `\ifstrequal` that fully expands the first two arguments.

```
19 \newcommand{\ifstrequal}[4]{%
20   \begingroup
21     \edef\thesistu@tempa{#1}%
22     \edef\thesistu@tempb{#2}%
23     \expandafter\expandafter\expandafter\ifstrequal
24       \expandafter\thesistu@tempa\thesistu@tempb{#3}{#4}%
25   \endgroup
26 }%
```

### 5.1.4 Fonts

`\thesistu@HUGE` Initializes the font sizes.

```
\thesistu@huge
\thesistu@LARGE
\thesistu@Large
\thesistu@large
\thesistu@normalsize
27 \newcommand{\thesistu@HUGE}{\fontsize{30}{34}\selectfont}%
28 \newcommand{\thesistu@huge}{\fontsize{20}{23}\selectfont}%
29 \newcommand{\thesistu@LARGE}{\fontsize{17}{22}\selectfont}%
30 \newcommand{\thesistu@Large}{\fontsize{14}{18}\selectfont}%
31 \newcommand{\thesistu@large}{\fontsize{12}{14.5}\selectfont}%
32 \newcommand{\thesistu@normalsize}{\fontsize{11}{13.6}\selectfont}%
```

`SFFont` Selects the given font family as sans serif font.

```
33 \newenvironment{SFFont}[1]{%
```

Stores the current sans serif font in `\thesistu@f@family@tmp` and changes to the given sans serif font.

```
34   \begingroup
35     \sffamily
36     \global\let\thesistu@f@family@tmp=\f@family
37   \endgroup
38   \renewcommand{\sfdefault}{#1}%
```

In case the outer scope is already sans serif, the new font has to be activated.

```
39 \ifdefstrequal{\f@family}{\thesistuf@family@tmp}{\sffamily}{}%
40 }{%
```

The scope of the font change is the environment itself. Thus, no cleanup code is required in case the outer scope was already sans serif.

```
41 \renewcommand{\sfdefault}{\thesistuf@family@tmp}%
42 }%
```

## 5.2 Data

### 5.2.1 Dates

`\setdate` Creates the internal storage for the signing date.

```
43 \newcommand{\setdate}[3]{%
44 \newdate{thesistu@date@signing}{#1}{#2}{#3}%
45 }%
```

### 5.2.2 Textual Data

`\thesistu@def@data` Creates the internal storage for simple data entries.

```
46 \newcommand{\thesistu@def@data}[2]{%
47 \@namedef{thesistu@data@#1@def}{}%
48 \@namedef{thesistu@data@#1}{#2}%
49 }%
```

`\thesistu@def@data@invalid` Initializes the internal storage with error messages.

```
50 \newcommand{\thesistu@def@data@invalid}[2]{%
51 \@namedef{thesistu@data@#1@error}{%
52 \ClassError{thesistu}{No #2 issued}{Set #1 with #2.}%
53 }%
54 \@namedef{thesistu@data@#1}{\@nameuse{thesistu@data@#1@error}}%
55 }%
```

`\CreateData` Issues the construction of a setter function for a data entry given by `\setdate`.

```
56 \newcommand{\CreateData}[1]{%
57 \@namedef{set#1}##1{%
58 \thesistu@def@data{#1}{##1}%
59 }%
60 \thesistu@def@data@invalid{#1}{\string\set#1}%
61 }%
```

### 5.2.3 Persons

`\vutinfth@person@male` Two genders are differentiated for each person: male and female.

`\vutinfth@person@female`

```

62 \newcommand{\vutinfth@person@male}{male}%
63 \newcommand{\vutinfth@person@female}{female}%

```

`\ifmale` Convenience macros to determine the gender of a person.

`\iffemale`

```

64 \newcommand{\ifmale}[2]{%
65   \ifcsstring{\vutinfth@person@#1@gender}{\vutinfth@person@male}{#2}{}%
66 }%
67 \newcommand{\iffemale}[2]{%
68   \ifcsstring{\vutinfth@person@#1@gender}{\vutinfth@person@female}{#2}{}%
69 }%

```

`\vutinfth@def@person` Creates the internal storage for a person's name, titles and gender.

```

70 \newcommand{\vutinfth@def@person}[5]{%
71   \@namedef{\vutinfth@person@#1@def}{}%
72   \@namedef{\vutinfth@person@#1@prettitle}{#2}%
73   \@namedef{\vutinfth@person@#1@name}{#3}%
74   \@namedef{\vutinfth@person@#1@posttitle}{#4}%
75   \ifdefstring{\vutinfth@person@male}{#5}{%
76     \@namedef{\vutinfth@person@#1@gender}{\vutinfth@person@male}%
77   }{%
78     \ifdefstring{\vutinfth@person@female}{#5}{%
79       \@namedef{\vutinfth@person@#1@gender}{\vutinfth@person@female}%
80     }{%

```

For the full name, additional spaces have to be inserted depending on the presence of pre- or posttitles.

```

81   \ifstrempy{#3}{%
82     \ifstrempy{#2}{%
83       \@namedef{\thesistu@person@#1@fullname}{#4}%
84     }{%
85       \ifstrempy{#4}{%
86         \@namedef{\thesistu@person@#1@fullname}{#2}%
87       }{%
88         \@namedef{\thesistu@person@#1@fullname}{#2 #4}%
89       }%
90     }%
91   }{%
92     \ifstrempy{#2}{%
93       \ifstrempy{#4}{%
94         \@namedef{\thesistu@person@#1@fullname}{#3}%
95       }{%
96         \@namedef{\thesistu@person@#1@fullname}{#3, #4}%
97       }%

```

```

98   }{%
99   \ifstrempy{#4}{%
100    \namedef{thesistu@person@#1@fullname}{#2 #3}%
101   }{%
102    \namedef{thesistu@person@#1@fullname}{#2 #3, #4}%
103   }%
104 }%
105 }%
106 }%

```

**\thesistu@def@person@invalid** Initializes the internal storage with error messages.

```

107 \newcommand{\thesistu@def@person@invalid}[2]{%
108   \namedef{thesistu@person@#1@error}{%
109     \ClassError{thesistu}{No #2 issued}{Set #1 with #2.}%
110   }%
111   \namedef{thesistu@person@#1@name}{%
112     \@nameuse{thesistu@person@#1@error}}%
113   \namedef{thesistu@person@#1@prettitle}{%
114     \@nameuse{thesistu@person@#1@error}}%
115   \namedef{thesistu@person@#1@posttitle}{%
116     \@nameuse{thesistu@person@#1@error}}%
117   \namedef{thesistu@person@#1@gender}{%
118     \@nameuse{thesistu@person@#1@error}}%
119   \namedef{thesistu@person@#1@fullname}{%
120     \@nameuse{thesistu@person@#1@error}}%
121 }%

```

**\CreatePerson** Issues the construction of a setter function for a person given by **\setperson**.

```

122 \newcommand{\CreatePerson}[1]{%
123   \namedef{set#1}##1##2##3##4{%
124     \thesistu@def@person{#1}{##1}{##2}{##3}{##4}%
125   }%
126   \thesistu@def@person@invalid{#1}{\string\set#1}%
127 }%

```

#### 5.2.4 Polylingual Text

This class supports bi- and polylingual text via a key-value mechanism. See the **\CreatePolylingual** command further down for the actual definition of polylingual expressions.

**\AddLanguage** Constructs the temporary variables and the permanent storage for polylingual text in the given language.

```

128 \newcommand{\AddLanguage}[1]{%

```

First, the key for the current language, given by its name in the `babel` package, is created. Keys of the `keyval` package are internally stored as `KV@family@keyname`, where we use `thesistu` as family name and the argument as key name. The value that is given to this key as part of a function argument is assigned to a temporary storage.

```
129 \namedef{KV@thesistu@#1}##1{%
130   \namedef{thesistu@current@#1}{##1}%
131 }%
```

The key value is initialized as empty.

```
132 \nameuse{KV@thesistu@#1}{}%
```

The transfer from temporary to permanent storage is achieved by adding code to the already existing transfer routine. This causes each new language to issue the transfer for the previously defined language.

```
133 \ifundef{\thesistu@allocate@polylingual}{%
```

Define the transfer function, if it has not been defined so far.

```
134   \newcommand{\thesistu@allocate@polylingual}[1]{\@empty}%
135 }{}%
```

Store the current transfer function via `\let` to allow recursion.

```
136 \namelet{thesistu@allocate@polylingual@#1}%
137   \thesistu@allocate@polylingual
```

Define the transfer function to permanent storage.

```
138 \renewcommand{\thesistu@allocate@polylingual}[1]{%
```

Call the transfer routine of the previously defined language.

```
139   \nameuse{thesistu@allocate@polylingual@#1}{##1}%
```

To define the permanent storage, `\namexdef` is used the definition's scope has to be global.

```
140 \namexdef{thesistu@##1@#1}{%
141   \ifcsempy{thesistu@current@#1}{%
```

In draft mode we mark unassigned languages, i.e., polylingual expression that were not defined for a language that is in use when the polylingual expression is called.

```
142   \ifdraftdoc{%
143     [Draft: No ‘#1’ text for polylingual ‘##1’.]%
144   }\else{%
145     \relax
```

```

146         }\fi
147     }\fi

```

The use of `\@namexdef` expands the content of the temporary storage before assigning it to the permanent one.

```

148         \@nameuse{thesistu@current@#1}%
149     }\fi
150 }\fi
151 }\fi

```

At time of usage, the language, which is given as an argument, is checked against the currently active language.

```

152 \ifundef{\thesistu@selectlanguage@polylingual}{%

```

Define the language selection function, if it has not been defined so far.

```

153     \newcommand{\thesistu@selectlanguage@polylingual}[1]{\@empty}%
154 }\fi

```

Store the current selection function via `\let` to allow recursion.

```

155 \@namelet{\thesistu@selectlanguage@polylingual@#1}%
156 \thesistu@selectlanguage@polylingual

```

Define the selection function.

```

157 \renewcommand{\thesistu@selectlanguage@polylingual}[1]{%

```

Call the selection routine of the previously defined language.

```

158     \@nameuse{thesistu@selectlanguage@polylingual@#1}{##1}%

```

The currently active language is given by `\language`. If it matches the language, which was supplied as the argument, the content of the current permanent storage is returned.

```

159 \ifdefstring{\language}{#1}{\@nameuse{thesistu@##1@#1}}{\fi}%
160 }\fi
161 }\fi

```

`\CreatePolylingual` Creates the actual polylingual expressions.

```

162 \newcommand{\CreatePolylingual}[2] [] {%
163     \begingroup

```

The key-value pairs of the optional argument define the text that is returned for the respective languages. We use `thesistu` as the family name for the keys.

```

164     \setkeys{thesistu}{#1}%

```



Each key was already assigned a temporary storage, whose content has to be transferred to permanent storage.

```
165 \thesistu@allocate@polylingual{#2}%
166 \endgroup
```

The mandatory argument  $\{\langle arg \rangle\}$  is used to define the macro that returns the appropriate text for the currently active language.

```
167 \@namedef{thesistu@polylingual@#2}{%
168 \thesistu@selectlanguage@polylingual{#2}}%
169 }%
```

### 5.2.5 Thesis Types

$\text{thesistu@thesis@basetype@undergraduate}$  Two thesis categories are differentiated: `undergraduate` and `graduate`.  
 $\text{thesistu@thesis@basetype@graduate}$

```
170 \newcommand{\thesistu@thesis@basetype@undergraduate}{%
171 \thesistu@undergraduate}%
172 \newcommand{\thesistu@thesis@basetype@graduate}{%
173 \thesistu@graduate}%
```

$\text{\ifundergraduate}$  Convenience macros to determine the category of the selected thesis type.

```
\ifgraduate
174 \newcommand{\ifundergraduate}[1]{%
175 \ifstrequal{\thesistu@thesis@basetype}{%
176 \thesistu@thesis@basetype@undergraduate
177 }{#1}{}%
178 }%
179 \newcommand{\ifgraduate}[1]{%
180 \ifstrequal{\thesistu@thesis@basetype}{%
181 \thesistu@thesis@basetype@graduate
182 }{#1}{}%
183 }%
```

$\text{thesistu@thesis@doctortype@doctor}$  Two doctor thesis categories are differentiated: `doctor` and `phd`, where the latter  
 $\text{\thesistu@thesis@doctortype@phd}$  is for dissertation in the context of the Vienna PhD School of Informatics.

```
184 \newcommand{\thesistu@thesis@doctortype@doctor}{%
185 \thesistu@doctor}%
186 \newcommand{\thesistu@thesis@doctortype@phd}{%
187 \thesistu@phd}%
```

$\text{\ifdoctor}$  Convenience macros to determine the category of the selected doctor thesis type.

$\text{\ifphd}$  These need to be nested inside `\ifgraduate` conditions.

```
188 \newcommand{\ifdoctor}[1]{%
189 \ifstrequal{\thesistu@thesis@doctortype}{%
190 \thesistu@thesis@doctortype@doctor
```

```

191 }{#1}{}%
192 }%
193 \newcommand{\ifphd}[1]{%
194   \ifstrequal{\thesistu@thesis@doctortype}{%
195     \thesistu@thesis@doctortype@phd
196   }{#1}{}%
197 }%

```

Initialize the thesis category, the type and the specific degree with error messages.

```

\thesistu@thesis@basetype
\thesistu@thesis@doctortype
\thesistu@thesis@thesisname
\thesistu@thesis@degreename
198 \newcommand{\thesistu@thesis@basetype}{%
199   \ClassError{thesistu}{No \string\setthesis \space issued}{%
200     Set thesis type with \string\setthesis.}%
201 }%
202 \newcommand{\thesistu@thesis@doctortype}{%
203   \ClassError{thesistu}{No \string\setthesis \space issued}{%
204     Set thesis type with \string\setthesis.}%
205 }%
206 \newcommand{\thesistu@polylingual@degreename}{%
207   \ClassError{thesistu}{No \string\setthesis \space issued}{%
208     Set thesis type with \string\setthesis.}%
209 }%
210 \newcommand{\thesistu@polylingual@thesisname}{%
211   \ClassError{thesistu}{No \string\setthesis \space issued}{%
212     Set thesis type with \string\setthesis.}%
213 }%

```

Four main thesis types are differentiated: bachelor, master, doctor, and phd-school.

```

\thesistu@thesis@bachelor
\thesistu@thesis@master
\thesistu@thesis@doctor
\thesistu@thesis@phd
214 \newcommand{\thesistu@thesis@bachelor}{bachelor}%
215 \newcommand{\thesistu@thesis@master}{master}%
216 \newcommand{\thesistu@thesis@doctor}{doctor}%
217 \newcommand{\thesistu@thesis@phd}{phd-school}%

```

Internal convenience macros.

```

\@setthesisname
\@setdegreename
\@setgendereddegreename
218 \newcommand{\@setthesisname}[1]{%
219   \renewcommand{\thesistu@polylingual@thesisname}{#1}}%
220 \newcommand{\@setdegreename}[1]{%
221   \renewcommand{\thesistu@polylingual@degreename}{#1}}%
222 \newcommand{\@setgendereddegreename}[2]{%
223   \ifmale{author}{\@setdegreename{#1}}%
224   \iffemale{author}{\@setdegreename{#2}}%
225 }%

```

`\setthesis` Sets the thesis type.

```

226 \newcommand{\setthesis}[1]{%
227   \ifdefstring{\thesistu@thesis@bachelor}{#1}{%

```

Initializes bachelor thesis type.

```
228 \renewcommand{\thesistu@thesis@basetype}{%
229 \thesistu@thesis@basetype@undergraduate}%
230 \@setthesisname{\thesistu@polylingual@BACHELORTHESIS}%
231 \@setdegreename{\thesistu@polylingual@Bdeg}%
232 }{}%
233 \ifdefstring{\thesistu@thesis@master}{#1}{%
```

Initializes master thesis type.

```
234 \renewcommand{\thesistu@thesis@basetype}{%
235 \thesistu@thesis@basetype@undergraduate}%
236 \@setthesisname{%
237 \ClassError{thesistu}{No \string\setmasterdegree \space issued}{%
238 Set masterdegree with \string\setmasterdegree.}%
239 }%
240 \@setdegreename{%
241 \ClassError{thesistu}{No \string\setmasterdegree \space issued}{%
242 Set master degree with \string\setmasterdegree.}%
243 }%
244 }{}%
245 \ifdefstring{\thesistu@thesis@doctor}{#1}{%
```

Initializes doctor thesis type.

```
246 \renewcommand{\thesistu@thesis@basetype}{%
247 \thesistu@thesis@basetype@graduate}%
248 \renewcommand{\thesistu@thesis@doctortype}{%
249 \thesistu@thesis@doctortype@doctor}%
250 \@setthesisname{\thesistu@polylingual@DOCTORTHESIS}%
251 \@setdegreename{%
252 \ClassError{thesistu}{No \string\setdoctordegree \space issued}{%
253 Set doctor degree with \string\setdoctordegree.}%
254 }%
255 }{}%
256 \ifdefstring{\thesistu@thesis@phd}{#1}{%
```

Initializes phd-school thesis type.

```
257 \renewcommand{\thesistu@thesis@basetype}{%
258 \thesistu@thesis@basetype@graduate}%
259 \renewcommand{\thesistu@thesis@doctortype}{%
260 \thesistu@thesis@doctortype@phd}%
261 \@setthesisname{\thesistu@polylingual@PHDTHESIS}%
262 \@setdegreename{\thesistu@polylingual@Pdeg}%
263 }{}%
264 }%
```

```

\thesistu@thesis@mdeg@dipl Four master degrees can be selected: dipl., master, rer.nat., and
\thesistu@thesis@mdeg@master rer.soc.oec..
\thesistu@thesis@mdeg@rernat
\thesistu@thesis@mdeg@rersocoec
265 \newcommand{\thesistu@thesis@mdeg@dipl}{dipl.}%
266 \newcommand{\thesistu@thesis@mdeg@master}{master}%
267 \newcommand{\thesistu@thesis@mdeg@rernat}{rer.nat.}%
268 \newcommand{\thesistu@thesis@mdeg@rersocoec}{rer.soc.oec.}%

```

`\setmasterdegree` Sets the specific master degree.

```

269 \newcommand{\setmasterdegree}[1]{%
270   \ifdefstring{\thesistu@thesis@mdeg@dipl}{#1}{%
271     \@setthesisname{\thesistu@polylingual@DIPLOMATHEISIS}%
272     \@setgendereddegreegreename{%
273       \thesistu@polylingual@mdegDiplMale
274     }{%
275       \thesistu@polylingual@mdegDiplFemale
276     }%
277   }{%
278     \ifdefstring{\thesistu@thesis@mdeg@master}{#1}{%
279       \@setthesisname{\thesistu@polylingual@MASTERTHEISIS}%
280       \@setdegreegreename{\thesistu@polylingual@mdegMaster}%
281     }{%
282       \ifdefstring{\thesistu@thesis@mdeg@rernat}{#1}{%
283         \@setthesisname{\thesistu@polylingual@MASTERTHEISIS}%
284         \@setgendereddegreegreename{%
285           \thesistu@polylingual@mdegRerNatMale
286         }{%
287           \thesistu@polylingual@mdegRerNatFemale
288         }%
289       }{%
290         \ifdefstring{\thesistu@thesis@mdeg@rersocoec}{#1}{%
291           \@setthesisname{\thesistu@polylingual@MASTERTHEISIS}%
292           \@setgendereddegreegreename{%
293             \thesistu@polylingual@mdegRerSocOecMale
294           }{%
295             \thesistu@polylingual@mdegRerSocOecFemale
296           }%
297         }{%
298           }%

```

```

\thesistu@thesis@ddeg@rernat Three doctor degrees can be selected: rer.nat., techn., and rer.soc.oec..
\thesistu@thesis@ddeg@techn
\thesistu@thesis@ddeg@rersocoec
299 \newcommand{\thesistu@thesis@ddeg@rernat}{rer.nat.}%
300 \newcommand{\thesistu@thesis@ddeg@techn}{techn.}%
301 \newcommand{\thesistu@thesis@ddeg@rersocoec}{rer.soc.oec.}%

```

`\setdoctordegree` Sets the specific doctor degree.

```

302 \newcommand{\setdoctordegree}[1]{%

```

```

303 \ifdefstring{\thesistu@thesis@ddeg@rernat}{#1}{%
304   \@setgendereddegreename{%
305     \thesistu@polylingual@DdegRerNatMale
306   }{%
307     \thesistu@polylingual@DdegRerNatFemale
308   }%
309 }{}%
310 \ifdefstring{\thesistu@thesis@ddeg@techn}{#1}{%
311   \@setgendereddegreename{%
312     \thesistu@polylingual@DdegTechnMale
313   }{%
314     \thesistu@polylingual@DdegTechnFemale
315   }%
316 }{}%
317 \ifdefstring{\thesistu@thesis@ddeg@rersocoec}{#1}{%
318   \@setgendereddegreename{%
319     \thesistu@polylingual@DdegRerSocOecMale
320   }{%
321     \thesistu@polylingual@DdegRerSocOecFemale
322   }%
323 }{}%
324 }%

```

### 5.2.6 Declarations

**Textual Data** Creates the required textual data entries.

```

325 \CreateData{address}%
326 \CreateData{regnumber}%
327 \CreateData{firstreviewerdata}%
328 \CreateData{secondreviewerdata}%

```

**Persons** Creates the required person entries.

```

329 \CreatePerson{author}%
330 \CreatePerson{advisor}%
331 \CreatePerson{secondadvisor}%
332 \CreatePerson{firstassistant}%
333 \CreatePerson{secondassistant}%
334 \CreatePerson{thirdassistant}%
335 \CreatePerson{firstreviewer}%
336 \CreatePerson{secondreviewer}%

```

**Languages** Adds the desired languages to the polylingual expressions. All added languages have to be given as arguments to the `babel` package.

```

337 \AddLanguage{english}%
338 \AddLanguage{naustrian}%

```

PolyLinguals Creates the polylingual expressions.

```
339 \CreatePolylingual[
340   english=Advisor,
341   naustrian=Betreuung]{Advisor}%
342 \CreatePolylingual[
343   english=Second advisor]{Secondadvisor}%
344 \CreatePolylingual[
345   english=submitted in partial fulfillment of the requirements
346     for the degree of,
347   naustrian=zur Erlangung des akademischen Grades]{submission}%
348 \CreatePolylingual[
349   english=in,
350   naustrian=im Rahmen des Studiums]{in}%
351 \CreatePolylingual[
352   english=within the]{within}%
353 \CreatePolylingual[
354   english=Vienna PhD School of Informatics]{School}%
355 \CreatePolylingual[
356   english=by,
357   naustrian=eingereicht von]{by}%
358 \CreatePolylingual[
359   english=Registration Number,
360   naustrian=Matrikelnummer]{Registrationnumber}%
361 \CreatePolylingual[
362   english=to the Faculty of Informatics,
363   naustrian=an der Fakult\"at f\"ur Informatik]{faculty}%
364 \CreatePolylingual[
365   english=at the TU Wien,
366   naustrian=der Technischen Universit\"at Wien]{university}%
367 \CreatePolylingual[
368   english=Assistance,
369   naustrian=Mitwirkung]{Assistance}%
370 \CreatePolylingual[
371   english=The dissertation has been reviewed by:,
372   naustrian=Diese Dissertation haben begutachtet:]{Reviewed}%
373 \CreatePolylingual[
374   english=External reviewers:]{Reviewers}%
375 \CreatePolylingual[
376   english=Vienna,
377   naustrian=Wien]{Place}%
378 \CreatePolylingual[
379   english=Declaration of Authorship,
380   naustrian=Erkl\"arung zur Verfassung der Arbeit]{StatementChapter}%
381 \CreatePolylingual[
382   english={I hereby declare that I have written this Doctoral Thesis
383     independently, that I have completely specified the utilized
384     sources and resources and that I have definitely marked all parts
385     of the work - including tables, maps and figures - which belong
386     to other works or to the internet, literally or extracted, by
```

```

387   referencing the source as borrowed.},
388   naustrian={Hiermit erkl\are ich, dass ich diese Arbeit
389   selbst\andig verfasst habe, dass ich die verwendeten Quellen
390   und Hilfsmittel vollst\andig angegeben habe und dass ich die
391   Stellen der Arbeit -- einschlie{\ss}lich Tabellen, Karten und
392   Abbildungen --, die anderen Werken oder dem Internet im Wortlaut
393   oder dem Sinn nach entnommen sind, auf jeden Fall unter Angabe
394   der Quelle als Entlehnung kenntlich gemacht habe.}]{Statement}%

```

Degree titles.

```

395 \CreatePolylingual[
396   english=Bachelor of Science,
397   naustrian=Bachelor of Science]{Bdeg}%
398 \CreatePolylingual[
399   english=Master of Science,
400   naustrian=Master of Science]{MdegMaster}%
401 \CreatePolylingual[
402   english=Diplom-Ingenieur,
403   naustrian=Diplom-Ingenieur]{MdegDiplMale}%
404 \CreatePolylingual[
405   english=Diplom-Ingenieurin,
406   naustrian=Diplom-Ingenieurin]{MdegDiplFemale}%
407 \CreatePolylingual[
408   english=Magister der Naturwissenschaften,
409   naustrian=Magister der Naturwissenschaften]{MdegRerNatMale}%
410 \CreatePolylingual[
411   english=Magistra der Naturwissenschaften,
412   naustrian=Magistra der Naturwissenschaften]{MdegRerNatFemale}%
413 \CreatePolylingual[
414   english=Magister der Sozial- und Wirtschaftswissenschaften,
415   naustrian=Magister der Sozial- und Wirtschaftswissenschaften]{%
416   MdegRerSocOecMale}%
417 \CreatePolylingual[
418   english=Magistra der Sozial- und Wirtschaftswissenschaften,
419   naustrian=Magistra der Sozial- und Wirtschaftswissenschaften]{%
420   MdegRerSocOecFemale}%
421 \CreatePolylingual[
422   english=Doktor der Naturwissenschaften,
423   naustrian=Doktor der Naturwissenschaften]{DdegRerNatMale}%
424 \CreatePolylingual[
425   english=Doktorin der Naturwissenschaften,
426   naustrian=Doktorin der Naturwissenschaften]{DdegRerNatFemale}%
427 \CreatePolylingual[
428   english=Doktor der Technischen Wissenschaften,
429   naustrian=Doktor der Technischen Wissenschaften]{DdegTechnMale}%
430 \CreatePolylingual[
431   english=Doktorin der Technischen Wissenschaften,
432   naustrian=Doktorin der Technischen Wissenschaften]{DdegTechnFemale}%
433 \CreatePolylingual[

```

```

434 english=Doktor der Sozial- und Wirtschaftswissenschaften,
435 naustrian=Doktor der Sozial- und Wirtschaftswissenschaften]{%
436 DdegRerSocOecMale}%
437 \CreatePolylingual[
438 english=Doktorin der Sozial- und Wirtschaftswissenschaften,
439 naustrian=Doktorin der Sozial- und Wirtschaftswissenschaften]{%
440 DdegRerSocOecFemale}%
441 \CreatePolylingual[
442 english=Doctor of Technical Sciences]{%
443 Pdeg}%

```

Thesis types.

```

444 \CreatePolylingual[
445 english=BACHELOR'S THESIS,
446 naustrian=BACHELORARBEIT]{BACHELORTHESIS}%
447 \CreatePolylingual[
448 english=MASTER'S THESIS,
449 naustrian=MASTERARBEIT]{MASTERTHESIS}%
450 \CreatePolylingual[
451 english=DIPLOMA THESIS,
452 naustrian=DIPLOMARBEIT]{DIPLOMATHESIS}%
453 \CreatePolylingual[
454 english=DISSERTATION,
455 naustrian=DISSERTATION]{DOCTORTHESIS}%
456 \CreatePolylingual[
457 english=PhD THESIS]{PHDTHESIS}%

```

**\settitle** Sets the title of the thesis.

```

458 \newcommand{\settitle}[2]{%
459   \CreatePolylingual[english=#1,naustrian=#2]{Title}%
460 }%

```

**\setsubtitle** Sets the subtitle of the thesis.

```

461 \newcommand{\setsubtitle}[2]{%
462   \CreatePolylingual[english=#1,naustrian=#2]{Subtitle}%
463 }%

```

**\setcurriculum** Sets the curriculum name.

```

464 \newcommand{\setcurriculum}[2]{%
465   \CreatePolylingual[english=#1,naustrian=#2]{Curriculum}%
466 }%

```



## 5.3 Layout

### 5.3.1 Setup

`\thesistu@squarebullet` Set internal convenience macros.

```
467 \newcommand{\newsetlength}[2]{%  
468   \newlength{#1}%  
469   \setlength{#1}{#2}%  
470 }%  
471 \newcommand{\thesistu@squarebullet}{\rule[0.47ex]{0.4ex}{0.4ex}}%
```

`\thesistu@tmp@parindent` Temporary storage for page layout lengths.

```
\thesistu@tmp@baselineskip  
  \thesistu@tmp@parskip  
472 \newlength{\thesistu@tmp@parindent}%  
473 \newlength{\thesistu@tmp@baselineskip}%  
474 \newlength{\thesistu@tmp@parskip}%
```

`\thesistu@savelayout` Saves and restores relevant page layout lengths.

```
\thesistu@restorelayout  
475 \newcommand{\thesistu@savelayout}{%  
476   \setlength{\thesistu@tmp@parindent}{\parindent}%  
477   \setlength{\thesistu@tmp@baselineskip}{\baselineskip}%  
478   \setlength{\thesistu@tmp@parskip}{\parskip}%  
479 }%  
480 \newcommand{\thesistu@restorelayout}{%  
481   \setlength{\parindent}{\thesistu@tmp@parindent}%  
482   \setlength{\baselineskip}{\thesistu@tmp@baselineskip}%  
483   \setlength{\parskip}{\thesistu@tmp@parskip}%  
484 }%
```

### 5.3.2 Title Page

Initialize the header graphics. The vertical placement of the header graphics on the title pages are given by `\thesistu@header@placement`, while the composition of the graphical elements are determined by the subsequent lengths, which constitute direct measurements of the graphics. If the header graphics are changed, these values have to be adapted.

```
485 \newsetlength{\thesistu@header@placement}{-41.49731pt}%  
486 \newsetlength{\thesistu@bar@width}{511bp}%  
487 \newsetlength{\thesistu@bar@height}{47bp}%  
488 \newsetlength{\thesistu@bar@pivotx}{330.71bp}%  
489 \newsetlength{\thesistu@bar@pivoty}{25.31bp}%  
490 \newsetlength{\thesistu@logo@height}{46bp}%  
491 \newsetlength{\thesistu@logo@pivotx}{4.57bp}%  
492 \newsetlength{\thesistu@logo@pivoty}{5.37bp}%  
493 \newsetlength{\thesistu@logo@offset@height}{\thesistu@logo@height}
```

```

494 + \thesistu@bar@pivot@y - \thesistu@logo@pivot@y}%
495 \newsetlength{\thesistu@logo@offset@x}{-\thesistu@bar@width
496 + \thesistu@bar@pivot@x - \thesistu@logo@pivot@x}%
497 \newsetlength{\thesistu@logo@offset@y}{
498 - \thesistu@bar@pivot@y + \thesistu@logo@pivot@y}%

```

\thesistu@header@titlepage Initialize header.

```

499 \newcommand{\thesistu@header@titlepage}{%
500   \centering
501   \begin{minipage}[b][\thesistu@logo@offset@height][t]{%
502     \thesistu@bar@width
503   }%
504   \includegraphics{TU_INF_header}%
505   \hspace*{\thesistu@logo@offset@x}%
506   \raisebox{\thesistu@logo@offset@y}{%
507     \includegraphics[scale=1]{TU_INF_Logo_gray}%
508   }%
509   \end{minipage}%
510 }%

```

\thesistu@footer@titlepage Initialize footer.

```

511 \newcommand{\thesistu@footer@titlepage}{%
512   \centering
513   \begin{minipage}{\textwidth}%
514     \centering\thesistu@normalsize\sffamily
515     Technische Universit\{"{a}t Wien\\
516     A-1040 Wien \thesistu@squarebullet\space
517     Karlsplatz 13 \thesistu@squarebullet\space
518     Tel. +43-1-58801-0 \thesistu@squarebullet\space
519     www.tuwien.ac.at%
520   \end{minipage}%
521 }%

```

thesistu@pagestyle@titlepage Generate the title page style.

```

522 \makepagestyle{thesistu@pagestyle@titlepage}%
523 \makerunningwidth{thesistu@pagestyle@titlepage}[\textwidth]{%
524   \thesistu@bar@width}%
525 \makeheadposition{thesistu@pagestyle@titlepage}{%
526   center}{center}{center}{center}%
527 \makeevenhead{thesistu@pagestyle@titlepage}{}%
528   \thesistu@header@titlepage}{}%
529 \makeoddhead{thesistu@pagestyle@titlepage}{}%
530   \thesistu@header@titlepage}{}%
531 \makefootrule{thesistu@pagestyle@titlepage}{%
532   \thesistu@pagestyle@titlepagefootrunwidth}{0.5pt}{\footruleskip}%
533 \makeevenfoot{thesistu@pagestyle@titlepage}{}%
534   \thesistu@footer@titlepage}{}%

```

```

535 \makeoddfoot{thesistu@pagestyle@titlepage}{\}%
536 \thesistu@footer@titlepage}{\}%

```

Set style element specifications.

```

537 \newsetlength{\thesistu@bigskipamount}{6mm}%

```

Helper functions.

```

538 \newcommand{\thesistu@bigskip}{\vspace{\thesistu@bigskipamount}}%

```

**\AdvisorBlock** Generates a block with the advisor's name (and potential assistances' names). An error is thrown, if the advisors are not defined consecutively, starting with the first.

```

539 \newcommand{\AdvisorBlock}{%
540   \ifundergraduate{%
541     \begin{minipage}[t][2.5cm][t]{\textwidth}%
542       \thesistu@normalsize
543       \begin{tabular}{@{}l@{ }l}%
544         \thesistu@polylingual@Advisor: &
545         \thesistu@person@advisor@fullname\\
546         \ifdef{\thesistu@person@firstassistant@def}{%
547           \thesistu@polylingual@Assistance: &
548           \thesistu@person@firstassistant@fullname\\
549         }{}%
550         \ifdef{\thesistu@person@secondassistant@def}{%
551           \ifundef{\thesistu@person@firstassistant@def}{%
552             \thesistu@person@firstassistant@error
553           }{%
554             & \thesistu@person@secondassistant@fullname\\
555           }%
556         }{}%
557         \ifdef{\thesistu@person@thirdassistant@def}{%
558           \ifundef{\thesistu@person@firstassistant@def}{%
559             \thesistu@person@firstassistant@error
560           }{%
561             \ifundef{\thesistu@person@secondassistant@def}{%
562               \thesistu@person@secondassistant@error
563             }{%
564               & \thesistu@person@thirdassistant@fullname\\
565             }%
566           }%
567         }{}%
568       \end{tabular}%
569     \end{minipage}%
570   }%
571   \ifgraduate{%
572     \begin{minipage}[t][1.6cm][t]{\textwidth}%
573       \thesistu@normalsize

```

```

574 \thesistu@polylingual@Advisor:
575 \thesistu@person@advisor@fullname
576 \ifphd{%
577 \ifdef{\thesistu@person@secondadvisor@def}{%
578 \\\
579 \thesistu@polylingual@Secondadvisor:
580 \thesistu@person@secondadvisor@fullname
581 }{}%
582 }%
583 \end{minipage}\par%
584 }%
585 }%

```

`\thesistu@signature@height` Set lengths of the signature blocks.

```

\thesistu@signature@width
\thesistu@placedate@width
586 \newsetlength{\thesistu@signature@height}{25mm}%
587 \newsetlength{\thesistu@signature@width}{51mm}%
588 \newsetlength{\thesistu@placedate@width}{50mm}%

```

`\SignatureFields` Generates a block with signatures and an optional place-date entry. The first argument is optional and adds an entry with date and place [y], or adds corresponding whitespace [h] or adds nothing [n], which is also the default value. The second arguments adds a rule and the given text below it, if a text is given, or the corresponding whitespace, if not. The third argument adds a rule and the given text below it, if a text is given.

```

589 \newcommand{\SignatureFields}[3][n]{%
590 {\thesistu@normalsize
591 \ifstrequal{#1}{y}{%
592 \begin{minipage}[b][\thesistu@signature@height]{%
593 \thesistu@placedate@width
594 }%
595 \thesistu@polylingual@Place,
596 \displaydate{\thesistu@date@signing}\vspace*{\baselineskip}%
597 \end{minipage}%
598 \hfill
599 }{}%
600 \ifstrequal{#1}{n}{}{}%
601 \ifstrequal{#1}{h}{%
602 \hspace*{\thesistu@placedate@width}%
603 \hfill
604 }{}%
605 \ifstreempty{#2}{%
606 \hspace*{\thesistu@signature@width}%
607 \hfill
608 }{}%
609 \begin{minipage}[b][\thesistu@signature@height]{%
610 \thesistu@signature@width
611 }%

```

```

612         \centering
613         \rule{\thesistu@signature@width}{0.5pt}\\
614         #2%
615     \end{minipage}%
616     \hfill
617 }%
618 \ifstrempy{#3}{}{%
619     \begin{minipage}[b]{\thesistu@signature@height}{%
620         \thesistu@signature@width
621     }%
622     \centering
623     \rule{\thesistu@signature@width}{0.5pt}\\
624     #3%
625 \end{minipage}%
626 }%
627 }%
628 }%

```

`\ReviewerBlock` Generates a block with the relevant signatures.

```

629 \newcommand{\ReviewerBlock}{%
630     \ifgraduate{%
631         \ifdoctor{%
632             {\thesistu@normalsize
633                 \thesistu@polylingual@Reviewed\\
634                 \SignatureFields[h]{%
635                     \thesistu@person@firstreviewer@name
636                 }{%
637                     \thesistu@person@secondreviewer@name
638                 }%
639             }%
640         }%
641         \ifphd{%
642             {\thesistu@normalsize
643                 \thesistu@polylingual@Reviewers\\
644                 \thesistu@person@firstreviewer@name.
645                 \thesistu@data@firstreviewerdata.\\
646                 \thesistu@person@secondreviewer@name.
647                 \thesistu@data@secondreviewerdata.\\
648             }%
649         }%
650     }%
651 }%

```

`\SignatureBlock` Generates a block with the relevant signatures.

```

652 \newcommand{\SignatureBlock}{%
653     \ifundergraduate{%
654         {\thesistu@normalsize
655             \SignatureFields[y]{%

```

```

656     \thesistu@person@author@name
657   }{%
658     \thesistu@person@advisor@name
659   }%
660 }%
661 }%
662 \ifgraduate{%
663   {\thesistu@normalsize
664     \ifdoctor{%
665       \SignatureFields[y]{}%
666       \thesistu@person@author@name
667     }%
668   }%
669   \ifphd{%
670     \SignatureFields[y]{%
671       \thesistu@person@author@name
672     }{%
673       \thesistu@person@advisor@name
674     }%
675   }%
676 }%
677 }%
678 }%

```

`\AddTitlePage` Generates the language-dependant title page. Multiline title and subtitle are supported.

```

679 \newcommand{\AddTitlePage}{
680   \thispagestyle{\thesistu@pagestyle@titlepage}%

```

Set a new page geometry where the header separation length (`headsep`) places the header. The actual header height (`head`) has to be large enough to contain the header content otherwise the underlying `memoir` class issues a warning.

```

681   \newgeometry{%
682     left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
683     headsep=\thesistu@header@placement,
684     head=2\thesistu@logo@offset@height
685   }%

```

Save the current page layout lengths for later restoration.

```

686   \thesistu@savelayout
687   \setlength{\parindent}{0pt}%
688   \setlength{\baselineskip}{13.6pt}%
689   \setlength{\parskip}{0pt plus 1pt}%

```

Set title page text to helvetica.

```

690   \begin{SFFont}{phv}%

```

```

691 \sffamily
692 {\centering
693 \vspace*{1.2cm}\par

```

Title and subtitle are bottom aligned and grow upwards.

```

694 \begin{minipage}[t][5cm][b]{\textwidth}%
695 \centering
696 \thesistu@HUGE{\bfseries\thesistu@polylingual@Title}\\
697 \bigskip
698 \thesistu@huge{\bfseries
699 \ifdef{\thesistu@polylingual@Subtitle}{%
700 \thesistu@polylingual@Subtitle}{%
701 }%
702 }%
703 \end{minipage}\par
704 \thesistu@bigskip\thesistu@bigskip
705 {\thesistu@LARGE\thesistu@polylingual@thesisname}\par
706 \thesistu@bigskip
707 {\thesistu@large\thesistu@polylingual@submission}\par
708 \thesistu@bigskip
709 \ifundergraduate{%
710 {\thesistu@LARGE{\bfseries\thesistu@polylingual@degree name}}\par
711 \thesistu@bigskip
712 {\thesistu@large\thesistu@polylingual@in}\par
713 \thesistu@bigskip
714 {\thesistu@Large{\bfseries\thesistu@polylingual@Curriculum}}\par
715 }%
716 \ifgraduate{%
717 {\thesistu@LARGE{\bfseries\thesistu@polylingual@degree name}}\par
718 \ifphd{%
719 \thesistu@bigskip
720 {\thesistu@large\thesistu@polylingual@within}\par
721 \thesistu@bigskip
722 {\thesistu@LARGE{\bfseries\thesistu@polylingual@School}}\par
723 }%
724 }%
725 \thesistu@bigskip
726 {\thesistu@large\thesistu@polylingual@by}\par
727 \thesistu@bigskip
728 {\thesistu@Large{\bfseries\thesistu@person@author@fullname}}\par
729 \smallskip
730 {\thesistu@large\thesistu@polylingual@Registrationnumber\
731 \thesistu@data@regnumber}\par
732 }%
733 \thesistu@bigskip\thesistu@bigskip
734 \ifgraduate{\ifphd{\vspace*{-8mm}}}%
735 \begin{minipage}[b][1.6cm][c]{\textwidth}%
736 \thesistu@normalsize%
737 \thesistu@polylingual@faculty\par

```

```

738     \thesistu@polylingual@university
739 \end{minipage}\par
740 \AdvisorBlock\par

```

Add stretchable glue between the advisor block and the signatures. This ensures that the signature part is always at the bottom of the page.

```

741     \vfill
742 \ReviewerBlock\par
743 \SignatureBlock\par
744     \vspace*{1cm}%
745 \end{SFFont}%
746 \pagestyle{empty}%
747 \cleardoublepage
748 \thesistu@restorelayout
749 \restoregeometry
750 }%

```

### 5.3.3 Front Matter Material

`\AddStatementPage` Generates the statement page.

```

751 \newcommand{\AddStatementPage}{
Set the same page geometry as for the titlepages.

752 %^^A \newgeometry{%
753 %^^A     left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
754 %^^A     headsep=\thesistu@header@placement,
755 %^^A     head=2\thesistu@logo@offset@height
756 %^^A }%

Save the current page layout lengths for later restoration.

757 \thesistu@savelayout
758 \setlength{\parindent}{0pt}%
759 \setlength{\baselineskip}{13.6pt}%
760 \setlength{\parskip}{0pt plus 1pt}%
761 \begin{SFFont}{phv}%
762     \sffamily
763     \chapter*{\thesistu@polylingual@StatementChapter}%
764     \thesistu@person@author@fullname\
765     \thesistu@data@address\par
766     \vspace{1.2cm}%
767     {\normalfont\thesistu@polylingual@Statement}\par
768     \vspace{1.2cm}%
769     \SignatureFields[y]{\thesistu@person@author@name}{}%
770 \end{SFFont}%
771 \cleardoublepage
772 \thesistu@restorelayout

```



```

773 %^^A \restoregeometry
774 }%

```

`\addtitlepage` Generates the titlepage in given language.

```

775 \newcommand{\addtitlepage}[1]{%
776   \selectlanguage{#1}%
777   \AddTitlePage
778 }%

```

`\addstatementpage` Generates the statement page.

```

779 \newcommand{\addstatementpage}{%
780   \selectlanguage{naustrian}%
781   \ifundergraduate{\AddStatementPage}%
782   \ifgraduate{%
783     \ifdoctor{\AddStatementPage}%
784     \ifphd{%
785       \selectlanguage{english}%
786       \AddStatementPage
787     }%
788   }%
789 }%

```

`acknowledgements` Generates the English acknowledgement section.

```

790 \newenvironment{acknowledgements}{%
791   \selectlanguage{english}%
792   \chapter{Acknowledgements}%
793 }{%
794   \cleardoublepage
795 }%

```

`acknowledgements*` Generates the English acknowledgement section without an entry in the table of contents.

```

796 \newenvironment{acknowledgements*}{%
797   \selectlanguage{english}%
798   \chapter*{Acknowledgements}%
799 }{%
800   \cleardoublepage
801 }%

```

`danksagung` Generates the German acknowledgement section.

```

802 \newenvironment{danksagung}{%
803   \selectlanguage{naustrian}%
804   \chapter{Danksagung}%
805 }{%

```

```

806 \cleardoublepage
807 }%

danksagung* Generates the German acknowledgement section without an entry in the table of
contents.

808 \newenvironment{danksagung*}{%
809 \selectlanguage{naustrian}%
810 \chapter*{Danksagung}%
811 }{%
812 \cleardoublepage
813 }%

abstract Generates the English abstract.

814 \renewenvironment{abstract}{%
815 \selectlanguage{english}%
816 \chapter{Abstract}%
817 }{%
818 \cleardoublepage
819 }%

abstract* Generates the English abstract without an entry in the table of contents.

820 \newenvironment{abstract*}{%
821 \selectlanguage{english}%
822 \chapter*{Abstract}%
823 }{%
824 \cleardoublepage
825 }%

kurzfassung Generates the German abstract without an entry in the table of contents.

826 \newenvironment{kurzfassung}{%
827 \selectlanguage{naustrian}%
828 \chapter{Kurzfassung}%
829 }{%
830 \cleardoublepage
831 }%

kurzfassung* Generates the German abstract.

832 \newenvironment{kurzfassung*}{%
833 \selectlanguage{naustrian}%
834 \chapter*{Kurzfassung}%
835 }{%
836 \cleardoublepage
837 }%

```

### 5.3.4 Page Style

`thesistu@pagestyle@default` Define the default page style of the thesis.

```

838 \makepagestyle{thesistu@pagestyle@default}%
839 \makeevenfoot{thesistu@pagestyle@default}{\thepage}{-}%
840 \makeoddfoot{thesistu@pagestyle@default}{-}{\thepage}%

\frontmatter Apply the default page style to the thesis.
\mainmatter
\backmatter
841 \aliaspagestyle{chapter}{thesistu@pagestyle@default}%
842 \aliaspagestyle{part}{thesistu@pagestyle@default}%
843 \addto\frontmatter{\pagestyle{thesistu@pagestyle@default}}%
844 \addto\mainmatter{\pagestyle{Ruled}}%
845 \addto\backmatter{\pagestyle{thesistu@pagestyle@default}}%
```

## 6 Change History

v0.9		<a href="#">#4</a> . . . . . 33
General: Pre-release version . . . . .	1	<code>\ifdoctor</code> : Added to support multiple dissertation types.
v1.0		<a href="#">Issue #4</a> . . . . . 17
General: Initial release version . . . . .	1	<code>\ifphd</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 17
v1.1		<code>\setthesis</code> : Altered to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 18
General: Added references to the GitLab environment . . . . .	1	<a href="#">Issue #4</a> . . . . . 18
v1.3		<code>\thesistu@thesis@doctortype</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 18
<code>\AddStatementPage</code> : Updated to support multiple languages. <a href="#">Issue #4</a> . . . . .	32	<code>\thesistu@thesis@doctortype@doctor</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 17
<code>\AddTitlePage</code> : Added check for subtitle existence before usage. <a href="#">Issue #1</a> . . . . .	30	<code>\thesistu@thesis@doctortype@phd</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 17
Updated to support PhD School mentioning and fixed the associated vertical overflow. <a href="#">Issue #4</a> . . . . .	30	<code>\thesistu@thesis@phd</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 18
<code>\AdvisorBlock</code> : Updated to support second advisor. <a href="#">Issue #4</a> . . . . .	27	General: Added support for a dissertation at the Vienna Phd School of Informatics. <a href="#">Issue #4</a> . . . . . 1
<code>\ReviewerBlock</code> : Updated to support external reviewers. <a href="#">Issue #4</a> . . . . .	29	<code>Persons</code> : Updated to support second advisor. <a href="#">Issue #4</a> . . . . . 21
<code>\SignatureBlock</code> : Updated to support multiple dissertation types. <a href="#">Issue #4</a> . . . . .	29	<code>PolyLinguals</code> : Added to support multiple dissertation types. <a href="#">Issue #4</a> . . . . . 22
<code>\addstatementpage</code> : Updated to support english version. <a href="#">Issue</a>		

Textual□Data: Updated to support external reviewer data. <b>Issue</b> <b>#4</b> . . . . .	21	v1.5	mainmatter pagestyle to 'Ruled'. . . . .	1
v1.4				
\mainmatter: Added 'Ruled' pagestyle. . . . .	35		General: Updated name of university to 'TU Wien'. . . . .	1
\vutinfth@def@person: Added comma to separate posttitle. . .	13		PolyLinguals: Updated name of university to 'TU Wien'. . . . .	22
General: Added comma to separate posttitle and changed		v2.01	General: Pre-release version Max . .	1

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